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U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

CHILDREN'S BUREAU

GRACE ABBOTT, Chief

THE NUTRITION AND CARE
OF CHILDREN IN A MOUNTAIN
COUNTY OF KENTUCKY

By

LYDIA ROBERTS

©

Bureau Publication No. 110



WASHINGTON
GOVERNMENT PRINTING OFFICE
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LETTER OF TRANSMITTAL.

JUNE 14, 1922.

SIR: There is transmitted herewith a report on the Nutrition and Care of Children in a Mountain County of Kentucky, by Lydia Roberts. The physical examinations were made by Dr. Frances Sage Bradley, assisted by E. Ida McCune, and Ethel M. Springer assisted in the direction of the field work. The visiting of the homes was done by Ella Ross and Alta Nelson. The investigation was planned by Miss Roberts, and the report written by her.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

Hon. JAMES J. DAVIS,
Secretary of Labor.



TYPICAL "KNOB."

Note layer of limestone near the top.

THE NUTRITION AND CARE OF CHILDREN IN A MOUNTAIN COUNTY OF KENTUCKY.

INTRODUCTION.

PURPOSE OF STUDY.

This report covers the findings of the first nutrition survey undertaken by the Children's Bureau in a rural district. Other rural studies have dealt with maternity and infant care, and the general conditions surrounding young children,¹ and some of them have revealed data of interest in connection with the nutrition of children, but in none was nutrition the chief object of the investigation. The study was made in a community in Kentucky in response to an appeal from the Kentucky State Board of Health to help find "why a State famous the world over for its prosperity should turn out so large a percentage of physically defective men as the draft records showed." Its purpose was to ascertain the physical condition of children of selected ages and to discover, if possible, the chief factors responsible for the conditions found. The field work was done in the winter of 1919-20.

THE COMMUNITY STUDIED.

Kentucky is distinctly a rural State, its urban population, according to the 1920 census, being 633,543, while its rural population was almost three times that number. The State board of health suggested a study of five typical counties in different parts of the State in order to secure a representative picture. Unfortunately, such an extended survey could not be undertaken. Instead a county was chosen which had two distinct types of country, a blue-grass section and a mountain section, and later it became necessary to limit the survey to the latter only, a section embracing an area of about 30 square miles. Every home within this area having a child between 2 and 11 years of age was visited. These years were chosen because it was desired to exclude the periods of infancy and puberty, which

¹Maternity and Infant Care in a Rural County in Kansas, U. S. Children's Bureau Publication No. 26, Washington, 1917; Rural Children in Selected Counties of North Carolina, U. S. Children's Bureau Publication No. 33, Washington, 1918; Maternity Care and the Welfare of Young Children in a Homesteading County in Montana, U. S. Children's Bureau Publication No. 34, Washington, 1919; Maternity and Infant Care in Two Rural Counties in Wisconsin, U. S. Children's Bureau Publication No. 46, Washington, 1919; Maternity and Child Care in Selected Rural Areas of Mississippi, U. S. Children's Bureau Publication No. 88, Washington, 1921.

involve special problems it was not deemed expedient to consider. In all, 123 families, with 256 children of the selected age, were interviewed.^a

In a nutrition study in a rural community, the physiography and soil assume great importance not only because the food supply is directly dependent on them but also because they almost entirely determine economic status. Rich farming land presupposes an abundant food supply and financial prosperity, while hilly, stony soil usually means uncertain, meager crops and a struggle to obtain the necessities of life.

The county in which the area studied is located contains within its borders extremes of richness and of poverty of soil. The greater part of the county is in the blue-grass section where the soil is of great fertility, but a small portion of it extends into "the knobs," or "the mountains," as the rocky cone-shaped hills are called, where the soil is for the most part exceedingly poor. It was this small, mountainous part which constituted the area studied.

The farms of the area are of three types, depending on their location. The lowland just at the foot of the mountains is the poorest soil in the district. It rests upon a bed of shale only a few feet from the surface. This land is wet and sour and needs drainage, ground limestone, and phosphorus. Plenty of limestone lies near at hand, for "the knobs" are composed largely of limestone and near their tops are found massive outcroppings of the rock; if this rock could be pulverized and put on the land below it would be the greatest possible boon to the soil. Up to the time of this study, however, rock crushers were not available. On the sides of the mountains between the limestone and the lower shale land are farms far better than those of the lower land. The soil is better drained, and is enriched by washings from the limestone areas above. The third type of farm is found on the tops of some of the knobs. Here the soil is more nearly comparable than any other in the surveyed area to the soil of the blue-grass region, since it rests upon a limestone bed which by slow disintegration supplies the needed lime. As a rule, therefore, the better farms in this section are the upland farms, although similar to these in fertility are the patches of bottom lands with rich productive soil which has been formed by overflows of creeks and the consequent deposition of sediment. It is evident that the economic status of a family in the area studied can be predicted fairly accurately from the location of its farm.

Although the chief crop of the section is corn, only enough is produced for local needs. The average yield is about 15 bushels per

^a In discussion of material based upon these interviews, cases not reported as to the particular item under consideration, usually not more than two or three in number, are omitted. The per cents are based upon the total number of cases.

acre, though some farms in the section yield considerably higher than this average, and some yield as little as 5 bushels. Other crops include tobacco,² oats, and rye in limited amounts, cowpeas, and sorghum. The upland soil is adapted to fruit culture, and a few of the progressive farmers of the section have planted orchards. In spite of the fact that frosts may kill the crop for a number of years in succession, a good yield once in five or six years, in the opinion of experts, makes fruit growing well worth while.

That poor roads and lack of development in a community go hand in hand is probably nowhere better illustrated than in the locality studied. The roads over which the majority of the people have to travel to get to market are almost universally poor. Although none of the families visited lived farther than about 7 miles from a fair-sized town, many were as isolated as if the distance were several times as great. For them to get to town was at certain seasons not only a long, laborious task, but often for prolonged periods an absolutely impossible one.

The 123 families visited in this survey were all native white and with very few exceptions were of mountain stock. Poor roads had tended to isolate them, although they lived within a few miles of a small town with railroad and educational advantages, which no doubt had influenced them to a certain extent. Their natural shyness and reserve, a heritage from many generations of mountain ancestors, has made them slow in responding to outside influences.

A visitor to the mountains never fails to be impressed by the premature ageing of the majority of the people, particularly the women. The early age at which the women marry and assume the cares of a home and family doubtless offers a partial explanation of this fact.

METHOD OF STUDY.

A nutrition survey necessarily consists of two parts: First, a study of the physical condition of the children to determine their state of nutrition and to discover any clinical factors which may be either the result or the cause of poor nutrition; second, an examination into the factors of diet and care responsible for the condition of health in which the children are found. In the present study the children's physical condition was ascertained by means of a medical examination made by a doctor on the staff of the Children's Bureau, and information concerning their diet and care was gathered through interviews with the mothers in their homes by agents who were specialists in food and nutrition. A schedule covering the information to be

²Although the soil in general is not adapted to raising tobacco, the farmers had found in their barn lots and dooryards small plots of 1 to 1½ acres which could be used temporarily for this crop.

sought from a mother regarding the diet and care of her children was prepared, and general items of importance in a consideration of the nutrition and general health of the children were also included.³ The visiting of the homes was done first, because this part of the study required more time, and because it also gave opportunity to explain to the mothers the purpose and value of the physical examination which formed the second part of the inquiry.

It was usually the mother but sometimes the father who was interviewed by the agent of the Children's Bureau. Often, indeed, the two answered the questions together, the mother supplying the information about the child's personal habits and the father contributing facts about the garden, the milk, and general farm matters. As a rule the agent's visit was expected, for contact had already been made with the children through the school, and word concerning the purpose of the inquiry and the intention of the agents to visit the parents had been carried home. The reception of the agents in the homes was invariably courteous, and answers to all the questions were freely given.

Whatever difficulties arose in securing accurate data came not from unwillingness on the part of the mothers to give the information but from the fact that they did not know their children's habits, particularly in regard to food. "I put the food on the table; I don't pay no 'tention to what nobody eats," was a not infrequent response. The mother, however, always knew what she had cooked, and she usually knew what the younger children ate, and the older children could supply the needed data regarding their own food. Since the agents were specialists in nutrition, they were able to supplement the schedule inquiries by further questions regarding essential points. It is believed, therefore, that the information secured is as accurate as can be obtained by the schedule method.

After the home visits were completed, the Children's Bureau "Child-Welfare Special" came to the locality in order that the children studied might be physically examined. The "special" is a large automobile truck fitted up as a health center and equipped with scales, measuring devices, and other facilities needed by a physician in giving a complete physical examination. A doctor, a nurse, and a clerk travel with the car.⁴

The "special" visited certain schoolhouses in the district, and the mothers were notified in advance, by letter usually, when and where to bring their children. Most of them when visited had seemed interested in having their children examined when the car should arrive, but persistent rain, muddy and impassable roads, lack of

³ See schedule, following p. 41.

⁴ The Child-Welfare Special. U. S. Children's Bureau Publication No. 69. Washington, 1920.

conveyance, illness, and, in some cases, inadequate clothing for the children kept many of them away. However, 149 children—a little more than half the number for whom schedules were obtained—reported for examination. Of those who arrived not a few struggled through great difficulties. One mother walked several miles in the rain carrying a baby, while the three older children trudged along in the mud beside her; another was obliged to walk to town for soap to wash the clothes her children were wearing, before she could bring them; and a third also found it necessary to make a trip to town on foot in order to purchase clothing for the occasion. Even then she had to borrow from a neighbor in order to have enough. Such are a few of the efforts which the mothers are known to have made in order that their children might have the benefit of the examination.

The examination was made in the presence of the mother or other person who accompanied the child to the car, and since each mother was told the special needs of her child as disclosed by the examination, it became of immediate personal value as well as serving the purpose of the study.

THE PHYSICAL CONDITION OF THE CHILDREN.

One hundred and forty-nine children, 58 per cent of the total number between 2 and 11 years of age for whom information regarding home care was obtained, received physical examinations.⁵ It is, therefore, only to these 149 children that the findings with reference to physical conditions relate.

RESULTS OF WEIGHING AND MEASURING.

The children were weighed without clothes and the height was taken without shoes or stockings. In the absence of a standard of stripped weights with which to compare the weights of these children, a table derived from the Bowditch figures was used.⁶ According to this scale, 20 per cent of the children were found to be 7 per cent or more underweight. A considerable number of this group were markedly below—from 15 to 23 per cent under the average.

CLINICAL FINDINGS.

Number of Defects.

The total number of physical defects found in the children, without regard to the relative seriousness of the kinds of defects, is shown

⁵ See p. 39.

⁶ A table of average stripped weights was derived by subtracting Bowditch's figures of estimated weights of clothing from his averages including weights of clothing. Bowditch, H. P.: Eighth Annual Report of the State Board of Health of Massachusetts, 1877.

in Table I. Thus, abnormal tonsil conditions count as one defect, decayed teeth as another, any heart defect as a third, and so on. Only five of the children examined were found to be free from physical defect of any kind; the greater number had from 3 to 5 defects, but a number had 6 or 7, and a few even had from 8 to 10. The total number of defects found in the 149 children studied was 621, an average of more than 4 to each child. The younger children—those under 6—averaged 3.2 defects each; the children between 6 and 11 years of age averaged 4.6 defects. This difference may be partly explained by the greater prevalence of decayed teeth among the older children.

TABLE I.—Number of physical defects, by age; children 2 to 11 years of age given physical examinations.

Number of defects.	Children given physical examinations.			Number of defects.	Children given physical examinations.		
	Total.	2-5 years of age.	6-11 years of age.		Total.	2-5 years of age.	6-11 years of age.
Total.....	149	45	104	5.....	29	8	21
None reported.....	5	4	1	6.....	10	1	9
1.....	13	9	4	7.....	13	2	11
2.....	12	3	9	8.....	6	1	5
3.....	20	7	13	9.....	4	1	3
4.....	31	5	26	10.....	2	1	1
				Number not reported.....	4	3	1

Total number of defects reported for all children, 621.

It was evident that many of these defects were due to lack of proper care, and that nearly all needed early attention if permanent injury to the children was to be avoided. Comment will be made regarding only a few defects the relation of which to nutrition is of special importance.

Tonsils and Adenoids.

Seventy-four children, 50 per cent of the total number examined, were found to have enlarged or diseased tonsils. Symptoms indicative of adenoids were found in 27 per cent of the children.

Teeth.

More than three-fourths of the children examined (78 per cent) were found to have carious teeth. Even in the preschool group over half the children, 25 of 45, had decayed temporary teeth; 91 of 104 children 6 to 11 years of age, inclusive, had decayed teeth either permanent or temporary, and nearly one-third of the children in this age group had one or more permanent teeth decayed.

That lack of care may have been a factor in producing this condition is indicated by the fact that 122 of the children (82 per cent) were reported by the examining physician to have dirty teeth, and 26 children (17 per cent), inflammation of the gums.

Nutrition.

Weight in relation to height affords a rough indication of a child's general nutritive condition. It is customary, indeed, to class as undernourished all those who fall a certain per cent (usually 7 or 10 per cent) below the average weight for their height. In the present study it was desired in determining the nutrition to consider other criteria than weight alone, and also to show more gradations of nutrition than two—those corresponding to the undernourished and the well nourished. Five grades of nutrition were established—ex-

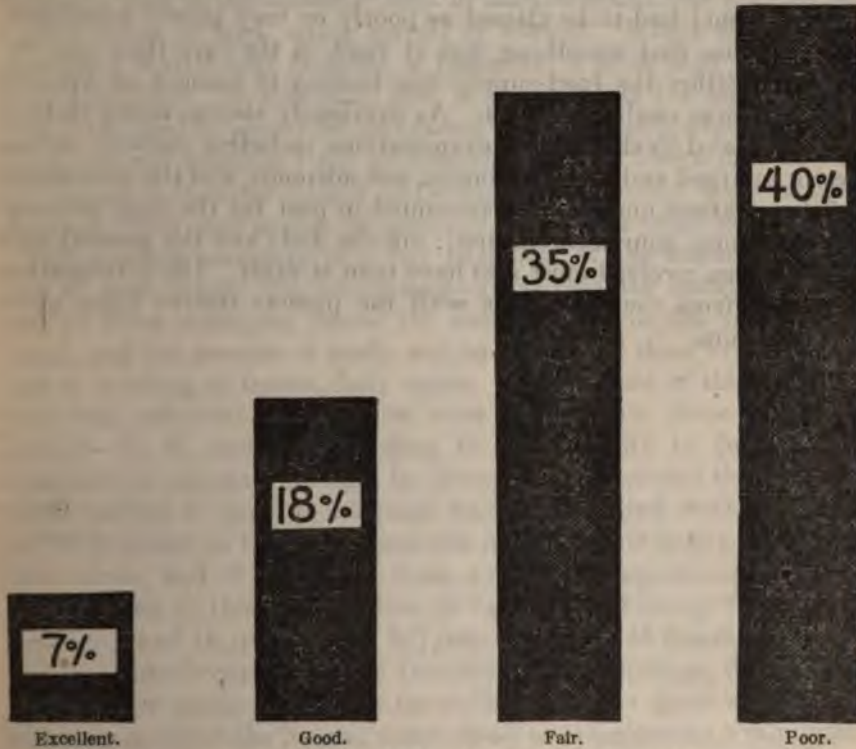


CHART I.—Per cent of children in each grade of nutrition.

cellent, good, fair, poor, and very poor—and the grade of each child was determined by the physician who made the physical examination. The weight was used as a guide, but it was not allowed absolutely to determine a child's grade of nutrition. As it happened, practically all the children 7 per cent underweight by the standard used were graded poor by the physician, but the converse was not always the case. A fat, flabby, anemic child was rated poor even though he measured well up to the average in weight, as was also a child who was unmistakably thin and undernourished. Every available factor, indeed, was taken into consideration in classifying the children.

It was found that only 10 children (7 per cent) could qualify as "excellent," and but 27 children (18 per cent) as "good." Two-thirds were classed either "fair" (35 per cent) or "poor" (34 per cent), and 9 children (6 per cent) were so much below par as to be rated "very poor." The significance of these figures becomes more apparent when it is borne in mind that with proper care and adequate and suitable diet maintained continuously from birth, every child should have been in the "excellent," or certainly in the "good," group. When only one-fourth of the children could be definitely graded as in excellent or good nutrition and when almost two-fifths (39 per cent) had to be classed as poorly or very poorly nourished, it is obvious that something was at fault in the care they had received. Either the food supply was lacking in amount or kind or the body was unable to use it. As previously shown, many defects were revealed by the physical examinations, including anemia, carious teeth, enlarged and diseased tonsils, and adenoids, and the prevalence of these defects undoubtedly accounted in part for the high percentage of poorly nourished children; but the diets and the general care the children received must also have been at fault. The information obtained from the interviews with the parents throws light upon these factors.

HOME CONDITIONS DETERMINING THE CARE GIVEN THE CHILDREN.

ECONOMIC STATUS OF THE FAMILY.

Most of the homes visited—103 of the 123—were the homes of small farmers; that is, the economic head of the household was working at least 3 acres of land, either owned or rented.⁸ Where the land is extremely fertile and farming is intensive, 3 acres may furnish a good livelihood for a family; but, in sections like the one studied, where the soil is poor and the farms largely unimproved, a small farm can not possibly yield an adequate living. Forty-four of the 103 heads of families classed as farmers supplemented their income obtained from that source by earnings from some other occupation.

Information necessary to a fair judgment of the financial condition of each family was ascertained—regarding, for instance, in the case of those managing farms, the size of the farm, the acres cultivated, and the amount of stock; and in the case of those hired by the day or working at trades, their wages. On the basis of the information thus obtained the families were classed into three economic groups—A, B, and C—according to their ability to furnish the essentials of adequate living. In Group A are included the families whose ability to provide adequate food, shelter, and clothing could not be doubted; in Group B, those less certainly able so to provide for themselves; and in Group C, those who were unquestionably poor.

According to this classification 25 families containing 42 children between 2 and 11 years of age fell into Group A; 45 families with 95 children, into Group B; and 53 families with 119 children, into Group C. In other words nearly half the children (47 per cent) were living in homes in which the income was so small as to make even a minimum standard of care appear impossible, while but 16 per cent belonged to families clearly able to provide the modest requirements of adequate living.

Of the 25 families with the best economic status, 13 reported obtaining their living entirely from their farms, the average acreage of which was about 47; the others reported additional sources of income. Twenty-five of the 45 families in the B income group and 21 of the 53 in the C group reported that they were wholly dependent upon income from their farms.

⁸This classification is in accord with that used by the U. S. Bureau of the Census. See Thirteenth Census of the United States, Vol. V, Agriculture, 1909 and 1910, pp. 22-24.

HOUSING.

Housing bears an important relation to nutrition, since it affects directly the family's health and general welfare. On the whole the homes of the families studied seemed pitifully poor. Some were no more than board sheds with open cracks in the walls and floors, and no boards or banking at the base to keep out the wind; some, equally poor, were timeworn, one- or two-room log cabins with ample space between the logs and flooring and around the doors and windows to allow the air to enter freely; some were new shanties with one small window or perhaps with none at all. The old log houses, though often picturesque, were commonly far from desirable habitations. In many the chinking had fallen from the cracks, the floor was sagging, and the doors and windows were loose, so that at a dozen or more places the cold air had free access.

Only 3 of the 123 houses visited had a foundation; 37 were built on high, uninclosed piles, and 81 were placed either directly on the ground or on low piles or blocks with the space between the floor and the ground boarded up. Wide spaces were usually left between the boards. Only 27 houses had moderately close-fitting doors and windows. Broken window panes, unreplaced or stuffed with rags or covered with pasteboard, were common. Only 45 houses had at least one room that was plastered or ceiled. The kitchen was usually the coldest room in the house, being frequently little better than a shed. The mild climate made these conditions less serious than they would otherwise have been, but even so the majority of the children studied were living in houses that did not adequately afford protection from the weather.

A few modest but comfortable homes were found in the community. Several new log houses and some older ones that had been kept in good repair, together with a very small number of clapboarded, ceiled, or plastered frame houses, were adequate and comfortable dwellings.

In view of the poor construction of many of the houses, their heating was a problem. A fireplace with its open fire of logs added much to comfort and cheerfulness, but even a rousing fire on the hearth failed utterly to warm a house so open as were many of those visited. A small stove was not much more effectual. Of the 123 houses 63 were heated by fireplaces, 51 by stoves, and 7 had both a stove and a fireplace. The cooking in the homes was usually done on a kitchen stove, though many families also utilized the fireplace to some extent for cooking.

SANITATION.

The method of disposal of human waste in the district studied was most insanitary. Considerably over half the families, 56 per



A NEW LOG HOUSE OF BETTER TYPE.
Note the base.



A TYPICAL CABIN.

cent, had no toilet of any kind, but used the barn, the chicken house, the yard, or the woods. Only one family had a water-flushed toilet; 51 had some kind of a yard privy. More than one of these privies, however, because of broken walls or missing doors failed to offer even privacy, and others were distinctly insanitary, because easily accessible to animals and flies. The general attitude seemed to be that a privy was nonessential.

WATER SUPPLY.

More than half the families, 55 per cent, secured water from a spring, a stream—the “branch” it was usually termed—an open well, or some other unprotected source. The remainder obtained their supply from either a drilled well or a hydrant. Although undoubtedly the drilled well was a much safer source than the open well or the stream, the type used in this section appeared less safe than the term would imply. The well was not fitted with a tight cover nor the water drawn by a pump. Instead, the pipe, five or six inches in diameter, extended above the surface of the ground and was left open at the top. The water, which could be seen in the pipe a few feet below ground level, was drawn by means of a small bucket fitting into the pipe. The bucket hung by the well or sat on the ground when not in use. This, together with the fact that the pipe was uncovered, made contamination possible, though certainly less probable than in water secured from the other sources.

AVAILABLE FOOD SUPPLY.

The chief concern of this survey was to secure all the information possible regarding the diet of the children. In order to do this in a rural area, it was necessary to investigate the source of supply, since the kind, amount, and variety of the children's food depend upon the food supply and food habits of the family. In addition, therefore, to learning the habits of the individual child with reference to diet, a detailed study was made of the foods which were grown or purchased for family use. Thus information was obtained concerning the production, preservation, and use of milk, butter, eggs, fruit, vegetables, cereals, breads, and meat—the chief foods in any dietary.

Cereals and Bread.

Since corn was practically the only grain crop in the area, it was not surprising to find corn meal universally used for food. Most farmers took their corn to a local mill and had the whole grain ground into meal. This meal contained the bran layer and the germ, as well as the starchy endosperm—the part from which the usual

market product is made. Eighty-six families, representing 72 per cent of the children, used whole corn meal exclusively; 34 families purchased their meal at the store and so obtained only the bolted meal, while 3 families used some of both kinds. There can be no doubt of the distinct superiority of the whole meal over the bolted kind, especially if it is used as the main constituent of a rather restricted diet; most of the mineral matter of the grain as well as the vitamins which protect the body against the so-called deficiency diseases are contained in the bran and germ.

Wheat flour to some extent in all the homes supplemented corn meal. This flour was almost always the patent, highly milled variety, 118 families using only that made from bolted wheat. The remaining 5 families used some whole wheat or graham flour in addition. Oatmeal was used to a greater or less extent by 85 families.

Corn bread was the most common type of bread. Biscuits, however, occupied a place in the dietary second only to that of corn bread. Many families had biscuits for breakfast and corn bread for the other two meals, and frequently both were served at the same meal. A company meal, it seemed, demanded both, for apologies were offered when corn bread without biscuits was set before a guest. Yeast bread—or “light bread,” as it is usually called—occupied a very minor place in the dietaries of the families. In 85 homes, 69 per cent, corn bread and biscuits were used exclusively; only 37 families reported using any light bread. Some families who lived nearer town than the others bought light bread frequently, but in most homes it was purchased only on rare occasions. A single exception to the general practice was found in a home where the mother made light bread regularly and used corn bread and biscuits for occasional variation. The general relative use of these breads was strikingly shown by the local application of the term “bread,” which, it was soon discovered, always referred to corn bread.

This bread was usually made of corn meal, buttermilk, soda, and salt. Water was substituted for part of the milk if the milk supply was short. The bread was either baked in a sheet or fried in a skillet.

The biscuits observed in the school lunches and in the homes were usually large, underdone, and frequently yellow from excess of soda, and they were as a rule less palatable than the corn bread. They were most often made with soda and buttermilk, with water added if the amount of milk was insufficient.

Meat.

Meat was commonly regarded as a necessity and eaten at every meal. It was the custom for a farmer to keep at least one hog to fatten during the summer and kill in the fall. In general, it might

be said that the more prosperous the farmer the more hogs he killed. For example, 6 of the 9 families who killed five or more hogs belonged to the A income group, 2 to the B group, and 1 to the C group; while of the 27 families who killed but one hog, 12 were of the C group, 8 of the B group, and but 1 of the A group.

A little more than 80 per cent of the families killed at least a part of their own meat. Of these 101 families, 28 killed all they used, while 73 bought some meat to supplement their own. Twenty-one families purchased all their meat.

In the majority of families only salt meat was eaten, except during a short period immediately following butchering. The weather was not uniformly cold enough to make preservation by freezing practicable, and so the meat had to be preserved by means of salt. In addition to this, the meat which was purchased when the home supply gave out was usually salt.

In the section studied, hog killing was done in the late fall. The meat was usually salted on the day of the killing or very shortly afterwards. It was spoken of as fresh,^a however, for some time after it had been laid down in salt. This study was made during "hog-killin'" time, and so the majority of the families were having "fresh hog meat" three times a day.

It may readily be seen that a family which depended entirely upon its own butchering had to eat salt meat most of the time. This meat was bound to be fat salt "middlings" (the side meat) for a considerable part of the year; the fresh meat—ribs, backbones, and sausage—was eaten first, then the hams and shoulders, and lastly the middlings. When the middlings gave out more was purchased.

Some families bought fresh meat in small amounts the year round, and most of them occasionally killed chickens, though these were much less commonly used than might be expected in a farming community.

In order, in the discussion of the diet, to distinguish between families living almost entirely on salt meat and those having appreciable amounts of fresh meat with some regularity, the families have been separated into two groups—those having a salt meat diet for as much as eight months of the year and those having fresh meat as often as weekly for more than four months, no matter whether the meat was beef, pork, chicken, or rabbit. It will be seen, therefore, that even the families classed as "fresh meat users" were not necessarily having any large amount of such meat. Yet only 24 per cent of the families could qualify for this group, while 60 per cent be-

^aThe use of this term varied among the families. Some called meat fresh until it was hung up to dry, after it had been in salt two, three, or even six weeks; others, only while it had not yet absorbed enough salt to give it a salty taste, at the most two or three weeks after salting.

longed definitely in the "salt meat group." Sufficient data to classify the remainder were not obtained.

These facts are significant from the dietary standpoint. Although meat was served the year round three times a day, it consisted to such an extent of fat salt middlings that it made on the whole a questionable addition to the protein of the diet, the chief requisite that meat is supposed to supply. It is probable, moreover, that the vitamins which are present in fresh lean meat to a certain extent, and which are capable of protecting the body against certain nutritional disorders, were almost if not completely destroyed by the salting process. On the whole, therefore, the only food requirement which the meat supply in this section could be expected to contribute was that of energy.

Vegetables.

Every family visited except two had a garden. The yield of vegetables, however, was very limited in variety and amount. The vegetables most commonly raised were beans, white potatoes, tomatoes, and onions; next to these came corn, cabbage, lettuce, peas, beets, sweet potatoes, and squash, or pumpkin; much less common were cucumbers, radishes, turnips, parsnips, and rhubarb. Carrots, cauliflower, asparagus, and celery were almost unknown; while greens, such as chard, collards, and spinach—with the exception of mustard, which six families reported raising for greens—were not grown at all.

The list of vegetables raised, while it shows restricted variety, makes the situation as regards vegetables appear much better than it really was; the amounts of all but a few of those raised were commonly found to be so small as to be almost negligible. In many cases the garden might have been disregarded because of the small contribution it made to the family's food. Sometimes it "burned out" so early in the summer that it furnished nothing at all. "Our ground's plumb wore out," commented one woman in explanation of their garden's failure. Even in homes where gardens did better, not more than a few vegetables were raised in any amount.

Of the 123 families, only 13 reported having any vegetables to sell. This does not necessarily signify that even these families had an abundant crop; more probably it indicates a need for ready money in the fall. To secure money at that season a few beans or potatoes were sold, though to do so might mean the buying of these same foods in late winter or spring at a higher price.

Comparatively few vegetables were stored for the winter. Eight families stored no vegetables at all; 28 families stored one or two; and 87 families a little more than two, but not many. More than four-fifths of the families canned some tomatoes; one-half of them stored white potatoes; somewhat more than three-fifths stored dry

beans; only one-third stored cabbages and onions, and fewer than this, beets or turnips.

Again it must be stated that this list, meager as it is for a farming community, makes the situation appear much better than the reality. One or two dozen cans of tomatoes might be all that a family had, or a bushel or two of potatoes and a few beans might be the winter supply. It was common to find that the few vegetables which had been stored were already used by the end of January. During the remainder of the winter the family must either buy more or go without. Except for beans, which the family usually purchased, if possible, when its own supply was exhausted, to go without was the general custom.

It is thus seen that beans were the principal winter vegetable. In some families they were practically the only vegetable for the greater part of the year. Some had beans every day—much as people in other sections have potatoes—and it was an exceptional family that did not cook them at least as often as twice a week. To use local terminology, only two kinds appeared to be used, "soup beans" and "shuck beans." The former term is used to designate any kind of dry shelled beans—the navy bean, the red kidney, or any other variety. The navy bean is the one most raised, though specialists say that the red kidney bean would probably do much better. The "shuck" beans are the same beans dried with the shells on—string beans they are in reality—though the seeds are much larger than it is usual to let them become. The beans may be broken into pieces and dried, but more often they are strung on a thread and hung to dry in the kitchen. They are cooked with pork for a long time until both pod and seeds are tender.

Fruit.

In spite of the claim of agricultural specialists that this section is well adapted to fruit culture, very little fruit is grown. Fully 80 per cent of the families visited were found to raise no fruit at all, while the remaining 25 families raised a small number of apples or peaches, or, in a few cases, both.

This scarcity of orchard fruit was somewhat alleviated by the fact that large quantities of blackberries grow wild in the mountains and may be had for the picking. As proof of their abundance may be cited the record of three women who were out but "four hours and picked 14 gallons." Every family in the section was found to depend on wild blackberries to add fresh fruit to the diet. The blackberry season, however, lasts not more than a few weeks at the best, and so this fruit, which was the only one available in a large percentage of the homes, could influence the diet for but a short period unless it was canned. Practically every family (95 per cent), however,

canned or preserved some blackberries for the winter, though in many cases the amount put up was known to be very small.

The extent to which these families depended on blackberries for fruit is further shown by the fact that no other fruit was canned by nearly two-thirds of them (63 per cent). Somewhat less than a third (32 per cent) put up a few apples or peaches in addition, while six families canned or preserved no fruit at all, not even blackberries.

It may readily be seen that fruit, either fresh or preserved, was far from being a daily article of diet. Indeed it appears certain that a considerable number of families must have been without fruit of any kind for more than half the year—from the time the few canned blackberries gave out (in October, November, or December) until the next blackberry season the following summer.

Eggs.

In spite of the fact that 85 per cent of the families kept chickens, eggs were comparatively little used throughout the section. This was accounted for, in part, by the small production. The number of hens kept by a family was ordinarily not large, and the yield of eggs was unusually small. At the time this study was made, in late fall and early winter, 105 families were keeping a total of 3,604 hens, and the total daily yield of eggs was 215. The yield was not high, moreover, even in the most productive season of the year.

The explanation of the poor yield lay in the lack of care which was given the hens. Very poor shelter or none at all, even during the winter, was the usual lot of a flock, and their food was quite on a par with their housing. They ran wild the year round, and received practically no food but corn.

The few eggs produced were usually sold. "We can't eat eggs when every egg is worth 5 cents!" exclaimed one woman, voicing thereby the common sentiment. The daily consumption of eggs at the time of this study averaged less than one per family.

Sorghum.

In the community studied farmers customarily either raised enough sorghum for their own use or purchased it from their neighbors. Butter and "lasses," as the sorghum was locally called, was a favorite combination. The butter was stirred into the sorghum and the mixture eaten with biscuit. Children sometimes carried glasses of it in their school lunches. Sorghum appeared to be used somewhat less widely than usual during the year this study was made, due probably, at least in part, to its higher price. Many families were using a commercial corn sirup instead.

Milk and Butter.

Milk, throughout the area studied, was regarded as a necessity, and keeping a cow, if it could be afforded, was taken as a matter of course. Eighty per cent of the families had one or more cows at the time of the study. Of the 24 families without them, 9 were purchasing a regular and apparently adequate amount of milk, 4 were buying an irregular or an inadequate supply, while 11 families had very little or none.

Fifty-seven of the 99 families keeping one or more cows had no period when they were without milk of their own. Of these families those with more than one cow planned to have them go dry at different times, while the others traded the cow about to go dry for a fresh one.¹⁰ Thirty-four families, when the cow was dry, either bought milk or received it as a gift from neighbors. The milk secured was usually buttermilk and varied in amount and regularity. Eight families went without milk when their own cows furnished none.

Only one family in the whole district used condensed milk, and milk powder was unknown. To summarize, 100 families, or 81 per cent, were having a fairly steady milk supply, while 19 per cent either had no milk at all or were without it for considerable periods.

In many places milk figures little in the diet of children and perhaps not at all in the diet of adults. In this community, on the contrary, it was regarded as a staple article of diet and whenever obtainable, was drunk regularly by children and adults alike. When it was plentiful great pitchers of it were put on the table at every meal. "Milk," said one mother, "is what I've raised my family on. My family here uses buttermilk like it was water." A number of families testified to using milk "for water;" and many a strong man was pointed out proudly as having been reared on milk and corn bread.

Milk was alike the best feature of the better diets and the salvation of many of the poorer ones. Indeed, as later will be more fully apparent, it was the one redeeming feature of the whole food situation.

Seventy-one per cent of the families visited were accustomed to making all their own butter. Of the remainder, 13 families bought all they used, 4 supplemented their home supply by purchase, and 18 (15 per cent) used no butter. The amount that was made was frequently inadequate and the making of butter was necessarily discontinued in many homes during the period of decreasing milk supply as well as during the time when the cow was dry. At such times the families who depended entirely on their home supply of butter

¹⁰There were traders in this section who made a regular business of buying up dry cows and selling them at a higher price when they became fresh.

substituted drippings. Some families, to be sure, that had more than one cow could manage so that their own supply never failed. It is certain that a far larger number than the 15 per cent who did not use butter at all must have had a very limited supply or lacked this food entirely during an appreciable part of the year.

Absence of butter from the diet is of small consequence, providing plenty of whole milk is used, as it customarily was in the homes of this section whenever available. But, unfortunately, when the milk supply diminished or failed entirely and the family could no longer make butter, it was skim milk or buttermilk rather than whole milk which was usually secured. Thus the families who were most in need of butter, those using skim milk, were the ones without it, while the families having plenty of whole milk were also those who had butter.

Adequacy of food supply.

It has been seen that the diet of families in this section was much restricted. Vegetables and fruits, which are usually relied upon to lend variety and flavor to the diet, were little used, while even potatoes, a staple food, did not figure very largely in the dietary. Fresh meat, eggs, and butter, all of which add much in the way of flavor and general palatability as well as food value, had but limited use. The diet may indeed be described as one of corn bread, milk, and fat salt meat, while in some diets milk was lacking or limited in amount during at least a part of the year. Adding to this list beans, sorghum, and biscuits, with butter when the cow was fresh, and blackberries and a few vegetables for a short season, there results the usual diet at its best. Only a limited number of families fared better than this, their supply of milk and butter being more plentiful, fresh meat bought fairly frequently, and vegetables and fruit used more extensively.

So restricted a diet is unquestionably monotonous. A hopelessly monotonous diet, however, may be a perfectly adequate one if it is capable of supplying all the body's needs. The diet of corn bread and milk on which a considerable number of mothers stated they had reared their families is probably capable of barely meeting all the needs of the body, provided that the milk is whole and is taken in liberal amounts, and provided that the corn meal is made from the whole grain. Both of these conditions were often met in the diets studied in this district.

To suggest the advisability of living on a diet of these two foods is not for a moment, of course, intended. It can not be doubted that the addition of fruits and vegetables would render such a diet more surely safe as well as distinctly more palatable. Nevertheless the fact remains that it would be difficult to find two other foods which together would be better able to provide an adequate diet. Any

other whole cereal, or potatoes, might take the place of the corn meal, but if the milk is dropped out, decreased in amount, or changed to skim milk or buttermilk, as was all too frequently done in this section, the effect is disastrous.

The corn-bread and fat-meat diet which was the common one when milk was omitted is deficient in calcium, adequate protein, and vitamine content. Add any one or more of the foods used in the community—beans, biscuits, sorghum, potatoes, sweet potatoes, or fresh meat—and though the diet is bettered it still remains inadequate in some respect, notably in calcium and in the fat-soluble vitamine. Restore milk and all the deficiencies are covered. Small wonder, then, that milk is called a "protective" food. It is veritably the salvation of the diets of this community.

THE DIET OF THE CHILDREN.

In the discussion of the family food supply, the possibilities for the children's diet in the families studied have to no small extent been indicated. Diet is of such importance in relation to nutrition, however, that an effort was made to secure more detailed information concerning the feeding of the children between 2 and 11 years of age. The actual diet of a child on the day preceding the interview was learned,¹¹ and to supplement this information his food habits were ascertained—the amount of milk he drank; the frequency with which he ate fruits, vegetables, meat, and eggs; his likes and dislikes for important foods; his custom with reference to eating between meals; his indulgence in candy and other sweets; and his use of coffee and tea. As a result a fairly clear picture of the child's dietary was obtained, and what is believed to be a tolerably safe judgment regarding its adequacy was in most cases possible.

The feeding of the children during the period of infancy will first be discussed, after which consideration will be given to the use of the different classes of food and the adequacy of the diets as a whole.

INFANT FEEDING.

No study of the factors responsible for a child's nutritive condition would be complete without some inquiry as to his care and feeding during infancy. In this survey a detailed study was impossible, but a few important questions were included in the schedule. Information was secured as to whether or not a child was breast fed, the age at which he was weaned, and the time at which he was given solid food.

Breast feeding.

Practically all the children in the survey had the very distinct advantage of having been breast fed; 221, or 86 per cent, were reported to have been nursed for 6 months or longer, 4 less than this time, and only 9 had never been breast fed. For 22 children, no reply as to infant feeding was obtained. It was indeed fortunate that so many had had the benefit of breast feeding, for a breast-fed child has not only a better chance of living beyond infancy but can withstand much more in the way of unwise care and feeding than can an artificially fed child.

¹¹ If the diet on the day preceding varied from the ordinary one, a more typical day's diet was ascertained instead.

Age of weaning and age at which solid food was given.

Not only was breast feeding common but prolonged nursing was not at all unusual. Of the 221 children who were nursed for six months or longer only 22—10 per cent—were weaned before they were a year old. About half were weaned when they were between 1 year and 18 months of age and 44 per cent were nursed for 18 months or longer. Indeed, more than a fourth were not weaned until the age of 24 months or even later.

The prevalence of this custom of late weaning would be of greater significance had the children received no other food than breast milk before weaning. It was a common practice, however, to give tastes of food to very young babies. Thirty-four children (13 per cent) were given solid food before they were 1 month old, and fully two-thirds of the children were receiving it when they reached the age of 6 months. By solid food is meant food from the family table. The common belief and practice in respect to early feeding was probably summed up by the mother who stated that at about one month she began giving her babies "mighty nigh anything" that was soft, and at 5 months the whole family diet, because "a great big baby 5 months old can eat anything."

The feeding of babies, as the foregoing discussion indicates, was rarely according to plan, but followed rather the line of least resistance. A baby was nursed because it was the custom; he was taken to the table in his mother's arms and given tastes of whatever the mother ate; he was nursed whenever he cried; and he weaned himself when he grew big enough to prefer other food to breast milk or when another baby had usurped his place.

MILK.

Where the family food supply is as limited as in the locality studied the rôle which is played by milk becomes a doubly important one. Especial effort was therefore made to gather information regarding its use by the children. The amount of the family supply, taken in connection with the number in the family, afforded some indication of the amount available for each child, but further effort was made to learn how much each child consumed. The daily amount was usually reported by the mother as so many "cups." Since a "cup" might hold from a fourth to a half of a pint, the agent asked to see the cup which the child used and then approximated the amount. Inquiry was also made regarding frequently used foods containing milk, such as corn bread and milk gravy. From the amount consumed by the entire family, the number in the family, the amount which was taken as a beverage by the child, and the amount consumed in other food, a conservative estimate of the total amount of milk consumed by the child was made.

On the basis described above, it was judged that nearly three-fourths of the children, 72 per cent, consumed at least a pint of milk daily, the amount commonly regarded as the minimum for children of the ages covered by the study. The majority in this group, 57 per cent, had daily as much as one and one-half pints, a quart, or even more. Eighteen children were receiving well over a quart of milk a day, some of them nearly 2 quarts.

Not all were so fortunate, however; 63, or 25 per cent, of the children fell below the standard of a pint a day, and 24 of these, or 9 per cent of the total, had no milk at all—a serious situation for any children but doubly so for those in this section where the diet was so restricted in other respects.

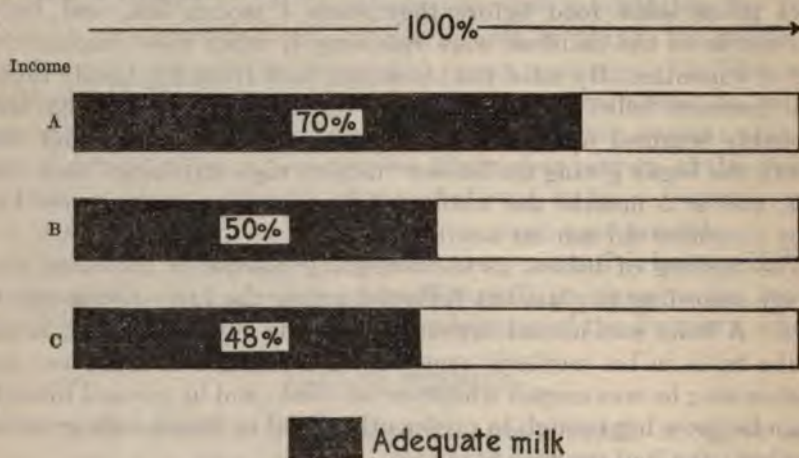


CHART II.—Adequate use of milk in relation to income.

The failure of these children to have sufficient milk was evidently not to any large extent the result of dislike for it, since only 16 children, or 6 per cent, were said not to care for milk, while a fourth of the children were getting less than the minimum amount. That milk was so generally liked by the children was probably due, in part, to the monotonous diet common in the community, and to the absence of highly flavored foods which tempt the appetite and make a bland, mild-flavored food like milk unpalatable. The fact that milk drinking by old and young was a community custom undoubtedly helped also.

Chart II shows how the proportion of children whose milk supply was adequate varied in the different income groups. Seventy per cent of the children in families with A incomes—the highest income group—had an adequate supply, and only about 50 per cent in the B or C groups.

A child's physical condition, however, depends not only on his present use of milk but on what he has had throughout his life. An effort was made, therefore, to secure for each child as complete a milk history as possible. In the belief that sufficient data were thus obtained to warrant forming a judgment as to whether or not a child had an adequate milk supply for practically all his life, the children have been classified as follows:

Class A: Those who undoubtedly had always had an adequate supply of milk.

Class B: Those who had experienced periods of ample and of scant supply, or children the adequacy of whose milk supply was doubtful.

Class C: Those who undoubtedly had not had an adequate supply.

More than half the children, 52 per cent, were considered as belonging in class A; nearly a third, or 31 per cent, were placed in class B; and about one-eighth, or 17 per cent, in class C.

EGGS.

Since eggs were not plentiful in this community they could not figure very largely in the diet of the children. Even during the period of maximum yield only 159 children, 62 per cent, had eggs twice a week or oftener—with sufficient frequency, that is, to influence their diet to any extent. Of the remainder, 24 were given an egg about once a week, 7 about once in two weeks—or even less frequently—and 64, or 25 per cent, had no eggs at all.

In the winter eggs were practically never eaten; 208 children, or 81 per cent, did not have any during that period; 7 had them as rarely as once in two weeks; only 17, about weekly; and only 23, or 9 per cent, twice a week or oftener.

Occasionally a mother said her child did not eat eggs because he disliked them, or because they disagreed with him. But usually the reason for the infrequency of eggs in the diet seemed to be that they were regarded as money.

VEGETABLES.

Vegetables other than beans did not figure largely in the family food supply and hence played but small part in the diet of the children. During the very short time the gardens produced, nearly all the children had access to fresh vegetables and ate them almost daily, but throughout the remainder of the year there was little opportunity for any variety. True, during the winter two-fifths of the children, 41 per cent, were reported to have some kind of vegetable as

often as five or six times a week; a somewhat larger number, 47 per cent, as often as two, three or four times a week; and only 27 children, or 10 per cent, ate no vegetables at all. But if it is recalled how few vegetables were raised, how short the garden period was, what limited amounts were canned or stored, and how restricted the purchase of them was, practically the only vegetable purchased being beans, it is clear that beans were often of necessity the only vegetable the children had during the winter and until the next garden season.

Children apparently failed to eat vegetables not because of distaste for them but rather because of the meagerness of the supply; 214 children, 84 per cent, were reported as eating and liking all the kinds they had had opportunity to try, and more than half the remainder, 22, were said to like all but one. It would appear that, on the whole, they ate willingly whatever was offered them.

FRUIT.

Plenty of fruit is commonly regarded as essential in the diet of children and fruit of some kind at least once a day is practically always considered a minimum requirement. Only 35 children included in this study, 14 per cent, customarily had fruit every day; 80 children, 31 per cent, had it several times a week; and more than half, 55 per cent, had little or none.

Fifty-four per cent of the children almost never had any other fruit than wild blackberries. The remainder occasionally had in addition an orange or a few canned or dried apples. A very limited number of those having fruit every day were known to be receiving a moderate variety.

MEAT.

Although meat was usually served three times a day in the community studied, the children did not necessarily eat it at every meal. The figures show that 94 children, or 37 per cent, were eating meat two or three times a day; 102, or 40 per cent, were eating it once a day; while 58 children, 23 per cent, ate it less frequently than daily and six of these ate no meat.

Although these figures seem to show that the children's meat consumption was rather high and that, therefore, they were securing a liberal supply of protein, this was not the case. During "hog-killin' time," to be sure—the period during which the study was made—many children were having fresh meat with a fair proportion of lean in it three times a day. One could tell which families had butchered by observing which children had fresh hog meat in their dinner pails at school. This period lasted but a short time. Considerably more than half the children were known to belong to families in which the meat supply was practically all salt middlings

and in the families of most of the remainder fresh lean meat was by no means common. If, as was true in many cases, the children had no other lean than the "little lean streak" in the middlings they could not be regarded as securing much protein even though they ate a "streak" or two of lean at each meal. Meat therefore made on the whole but a negligible contribution to the protein of the children's diets. With eggs little used, it may be seen that milk was the only food which could be relied upon to supply the needed animal protein.

BREAD AND CEREALS.

Biscuits made of bolted white flour and corn bread made in the majority of cases out of whole corn meal were the only bread eaten by 70 per cent of the children (179). The remainder had some yeast bread in addition, though usually as a rare treat rather than as a customary part of the diet. Only one child included in the study had light bread most of the time.

CANDY.

The candy habit, though not so extreme as among city children, was still a problem with which to reckon. Only 47, or 18 per cent, of the children had no candy at all or had it very infrequently; 17 had it almost daily; 80 (31 per cent) several times a week; and 111 (43 per cent), about once a week. More important than the frequency of eating, however, is the time at which candy is eaten. At the close of a meal a piece or two is probably harmless for children past early childhood, but eaten between meals it certainly can not be so regarded. The candy eaten by the children studied was almost invariably eaten between meals, for only five were said to have it at the end of meals.

The younger the child, the greater the harm which may be done by injudicious eating of unsuitable foods. The candy habit, like the coffee habit, is often started very early in life. Nearly half the children here considered (42 per cent) began eating it before they were six months' old, and all but 32 of the remainder who had candy at all were given it by the time they were 1 year of age. One mother said that long before they could sit alone her children had candy, while another knew that one of her children was given his first candy when only a few days old, for, as she explained, "it was while I was still a layin' in the bed, for I remember callin', 'Maw, do come and see Andrew Jackson eat this stick of candy!'"

The amount of candy consumed and the frequency of eating it probably depended more upon accessibility to a source of supply and financial ability to purchase it than upon any convictions the parents had as to its harmful effects. Thirty-four of the forty-seven children

who had little or no candy belonged to families in the C income group. Six children, however, were refused it because their parents felt it was not good for them. The fathers of these children brought from town fruit instead of candy for their treat. Of the 17 children who had candy almost daily 7 passed a store on their way to school; the parents of 2 others were in town every day; and 5 were "only children" and were humored by their parents.

Over two-fifths of the children, as has been noted, had candy about once a week. The father usually went to town on Saturday, and, apparently, did not feel that he had done his duty unless he brought home candy for the children. When the family was large and the income small, the amount each child received was not sufficient to do much harm, though eaten, as it was, between meals; but sometimes the amount was greater and a child was allowed to eat all he wanted, to the extent of interfering with his appetite for wholesome food. "He refuses his grub," observed the mother of a 2-year-old boy, whose father, to use the mother's words, "is a sight to buy candy."

Although undoubtedly some of the children were eating too much candy for their good, the majority probably did not receive enough to do them much harm. It is probable, however, that candy would have been as great a menace to the children's health in the locality studied as it is in any other if stores had been nearer at hand, and the money more easily spared.

COFFEE AND TEA.

No attempt has been made in this study to distinguish between coffee and tea, as their effect on children is about the same. In the following discussion, therefore, the use of the term "coffee" should be interpreted to mean either coffee or tea. As a matter of fact, it was coffee rather than tea which was generally used.

Coffee drinking was common among the children, though not to the extent that it frequently is among children in other localities. Of the children studied 45 per cent drank neither coffee nor tea. Four of these had previously done so, but had discontinued the habit, one because his mother thought it "made him nervous" and two of the others—in one family—because their mother, who had first given them tastes at about 6 months of age, decided that coffee was affecting one child's kidneys, and so stopped giving it to both. A few mothers were found who had never allowed their children coffee, because they believed it was not good for them, but usually when children did not drink coffee it was because they did not want it.

There were 142 children (55 per cent) who drank coffee, 64 irregularly, but 78, or 30 per cent, at least once a day. This is more significant in view of the fact that the coffee which the children drank

was not as a rule diluted with water or a large amount of milk. Of the children who used coffee at all 85 per cent drank it as strong as the adults in their families, and only 13 per cent had it diluted to any extent.

A second consideration which increased the probability of harm was the early age at which coffee drinking started. Of the 124 children whose age at beginning to drink coffee was ascertained all but 9 had started before they were 6 years of age. Sixteen had been given coffee before they were 6 months old and 50 more by the end of their first year. An early start seems to establish the habit; of the children who began at 1 year of age or younger 46, or 70 per cent, were having it daily or oftener. One small boy revealed that coffee had already become a necessity to him by his statement that it "hurt him in the head" if he did not have it.

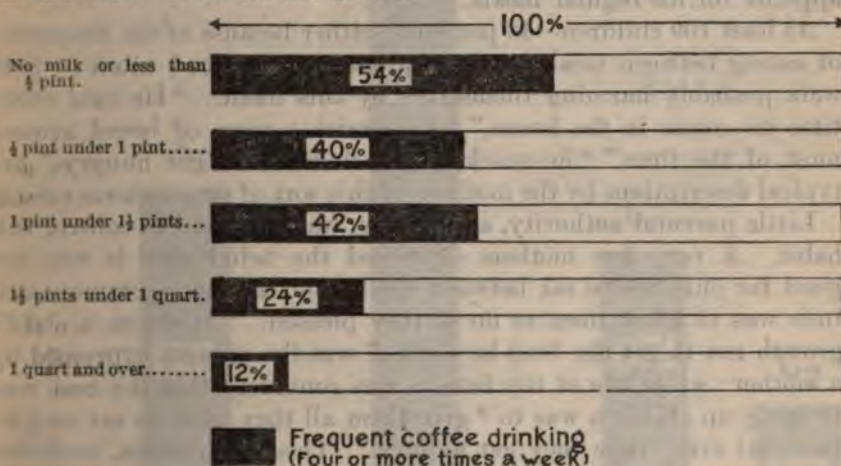


CHART III.—Coffee drinking in relation to the use of milk.

The custom is often begun when the mother takes the baby to the table in her arms and gives him tastes from her cup, just as she gives him tastes of potatoes and other foods. The custom of allowing small children to drink coffee is also in accord with the belief that they are competent to choose their own foods and to eat anything which the rest of the family have.

The consumption of coffee was apparently greater when the use of milk was small. Half the children who drank no milk drank coffee four times a week or oftener, while only 29 per cent of those who drank a pint or more of milk a day drank coffee to this extent. "If he has milk, he doesn't care for coffee," was a comment not infrequently made by mothers. One mother explained that her child drank coffee only when the family were using buttermilk, which the child disliked. Increasing the milk supply in this locality would probably decrease the use of coffee by the children.

EATING BETWEEN MEALS.

Among the children in the district eating between meals was not so serious a problem as it usually is among city children. Nevertheless, the habit of "piecing" was indulged in to a greater extent than can be considered wise. Only 10 of the children were said not to eat between meals, while 142 habitually did so at least once a day. The seriousness of the habit, however, depends not only upon its frequency but also upon the kind of things which are eaten. Simple foods, like bread and butter, milk, and fruit, eaten as an extra meal after school or as a midmorning lunch, are commonly regarded as harmless and sometimes even as advisable; but promiscuous indulgence in candy or other sweets or haphazard eating of any food, however harmless in itself, is fairly sure to interfere with a child's appetite for his regular meals.

At least 109 children—43 per cent—either because of the frequency of eating between meals or the character of the food eaten or both were probably harming themselves by this habit. "He eats every time he comes in the house," "he carries a piece of bread around most of the time," "he snacks so much he don't get hungry," are typical descriptions by the mothers of this sort of promiscuous eating.

Little parental authority, apparently, was exercised to control this habit. A very few mothers expressed the belief that it was not good for children to eat between meals, but the more common attitude was to allow them to do as they pleased. "It stunts a child's growth not to get the food he wants," was the opinion expressed by a mother; while one of the fathers was convinced that the best way to bring up children was to "give them all they want to eat and let them eat every time they get hungry." These statements, undoubtedly, sum up the current belief and practice in the locality.

ADEQUACY OF THE DIETS.

Owing to the method employed in this study only a very rough estimate of the quantity of food eaten was obtainable, and it was not possible to secure much definite information concerning the factors which determine the digestibility and assimilation of this food. Hence, in formulating judgments concerning the adequacy of the diets these two factors have been disregarded and the judgment in each case has been based upon whether or not the diet, assuming that enough was eaten and the body was able to utilize it, probably contained the constituents necessary to nourish the child. It is evident that a judgment thus arrived at does more than justice to the diets, for it is known that an insufficient amount of food and inability to utilize food eaten are two important causes of malnutrition in children; and even with these factors eliminated the évi-

dence still remains that the majority of the children studied were living on diets which were very far from meeting their requirements for growth.

In order to facilitate discussion and make possible the relation of diet to other conditions, the children have been placed in three groups according to the adequacy of their diets. Class A comprises all children whose diets it seemed fairly certain included the constituents required to nourish the growing body; class C includes

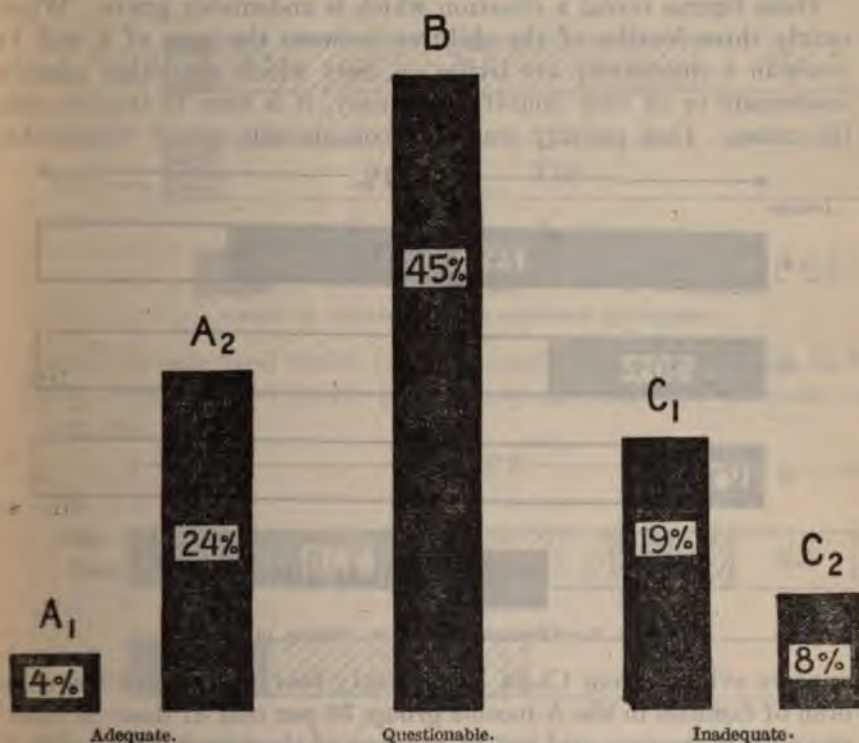


CHART IV.—Per cent of children in each grade of diet.

children whose diets just as certainly failed to meet these needs; and class B includes the children whose diets could not clearly be assigned to class A or class C. Classes A and C have been further subdivided into A₁ and A₂, C₁ and C₂, to show gradations of adequacy and inadequacy. The distinction between A₁ and A₂ diets is merely that the latter consist very largely, if not exclusively, of milk and corn bread made of whole meal, and so are very monotonous; while the former contain in addition fruit, vegetables, and in general a better variety. In the same way C₁ diets, though plainly inadequate, may have some redeeming feature, while those designated as C₂ are practically "deficiency diets."

According to this classification, 28 per cent, or more than a fourth of the children, had class A diets; 10 of these could be ranked as A_1 while 62 were on diets of A_2 grade. Nearly the same proportion of the children—27 per cent—were found to be receiving class B diets, 48 of them being considered B_1 , while the diets of 20 were exceedingly poor that they were classified as B_2 . The remainder of the children—45 per cent—were in the group having class C diets.

These figures reveal a situation which is undeniably grave. With nearly three-fourths of the children between the ages of 2 and 5 years in a community are living on diets which are either plain inadequate or of very doubtful adequacy, it is time to inquire into the cause. That poverty was to a considerable extent responsible

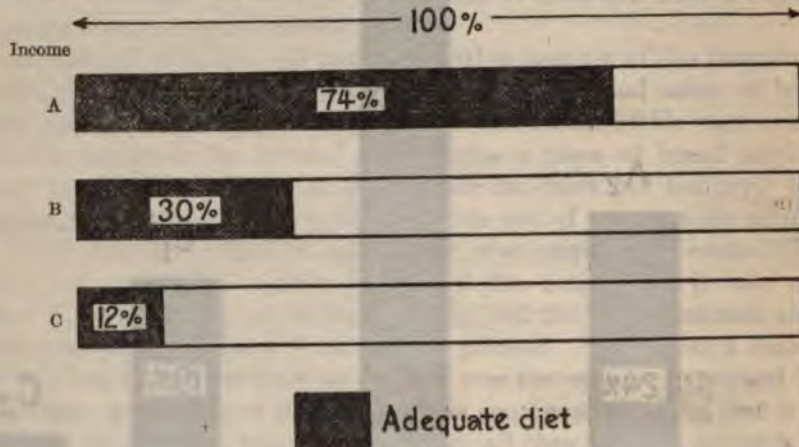


CHART V.—Adequacy of diet in relation to income.

appears evident from Chart V. Seventy-four per cent of the children of families in the A income group, 30 per cent of those in families with B incomes, and but 12 per cent of those in families with C incomes were receiving diets judged as adequate (class A). That ignorance and lack of control were also responsible can not be doubted. Little knowledge existed of children's food needs and little or no control was exercised over their diets. Even though poverty might be relieved, and improvement in the dietary followed, there would still remain the need of education in the food requirements of children.

Milk, as has already been stated, was the salvation of the diets in this section. Of the children having less than a pint of milk a day, practically all had an unquestionably inadequate diet. No child having less than a pint of milk daily had a class A diet, and even those securing this amount only half could be so classified. This indicates what was actually the fact, that the diets on the whole

were so lacking in all other important foods that their only chance of attaining adequacy was the inclusion of a liberal amount of milk. With no dependable supply of vegetables, fruit, eggs, butter, or lean

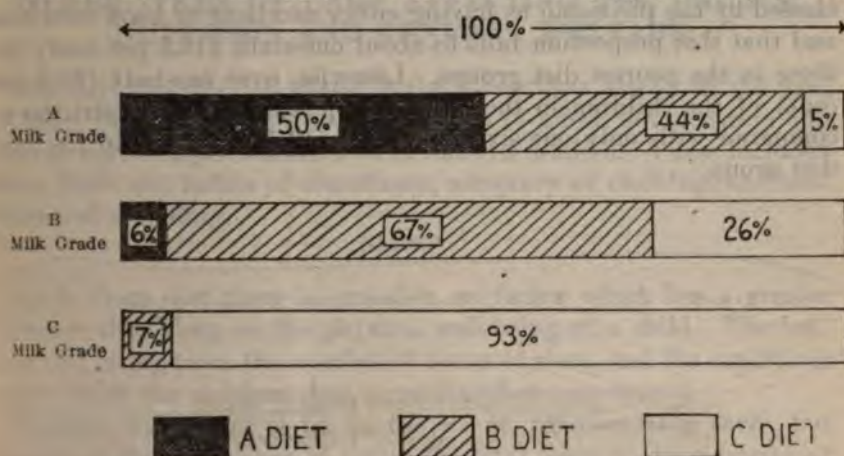


CHART VI.—Grade of diet in relation to use of milk.

meat, the sole food which could be counted on to any extent to furnish vitamins, minerals—particularly calcium—and adequate protein, was milk.

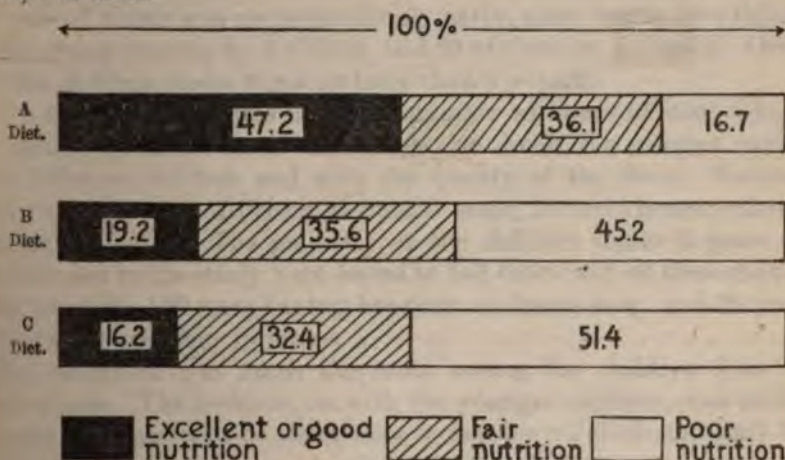


CHART VII.—Grade of nutrition in relation to grade of diet.

RELATION OF DIET TO NUTRITION.

The nutrition of the children, as determined by the medical examination, has already been discussed,¹² and the children have been classified into five groups—those with excellent, good, fair, poor, and very poor nutrition. It is of interest to compare the distribution

¹² See p. 7.

of the children according to the adequacy of their diets with their classification by grades of nutrition. Chart 7 shows that nearly one-half (47.2 per cent) of the children with the best type of diet were classed by the physician as having either excellent or good nutrition and that this proportion falls to about one-sixth (16.2 per cent) for those in the poorest diet groups. Likewise, over one-half (51.4 per cent) of the children in the latter group were in poor nutrition as compared with only one-sixth of those (16.7 per cent) in the best diet group.

OTHER ITEMS OF CARE AFFECTING THE CHILD'S NUTRITION AND GENERAL WELFARE.

Although the chief emphasis in the survey was placed on the food problem, other factors of hygiene known to affect the nutrition and general well-being of children were likewise studied. These included sleep, fresh air, habits of cleanliness, adequacy of clothing, and conditions of schooling.

SLEEP.

Aside from diet there is probably no factor which has a greater influence than sleep on the physical well-being of a child. The bedtime and rising time, the number of hours of sleep, and the conditions under which the children slept were therefore ascertained.

Bedtime was found to be, on the whole, commendably early, but because of the early hour of rising the total sleep in the majority of cases was less than the needed amount. Almost two-thirds of the 100 children under 6 years of age were in bed by 7 o'clock—the latest hour usually advised for children of this age—while all but 7 of the remaining third were in bed by 8 o'clock. Unfortunately, however, the time of rising was correspondingly early, since nearly two-thirds of this group were up by 5 o'clock, and 23 of them by 4 o'clock. Only 4 of the children under 6 got up later than 6 o'clock.

It is impossible to state the exact number of hours of sleep which are needed by children of these ages; no doubt the amount varies with different children and with the quality of the sleep. Various authorities advocate different amounts—some, 12 or 13 hours; others, a minimum of 11. The majority of the children under 6 years of age included in the study were found to fall below any of these standards; 65 of the 100 were having less than 11 hours sleep, and 38 were having even less than 10 hours.

The condition was much the same among the children 6 to 11 years of age. The bedtime, as with the younger children, was early, for nearly 90 per cent of them were in bed by 8 o'clock and half by 7 o'clock; but again the early rising hour cut short the amount of sleep. Only 7 of the 156 children in this group got up later than 6 o'clock in the morning, while almost seven-tenths were up by 5 and 29 arose as early as 4. The number of sleeping hours, therefore, in spite of the early bedtime, was less than it should have been. Almost half the children in this group fell below a 10-hour minimum, the least amount estimated as sufficient for children 6 to 11 years of age.

A popular impression exists that sufficient sleep is not a problem for children in rural communities because of the habit of early retiring. This study shows that the "early-to-bed" habit was by no means a sure indication that a child was getting sufficient sleep. In spite of the fact that the large majority of the children in the district studied were going to bed early, more than half—55 per cent—were securing less sleep than the amount required, according to the lowest standards for their respective ages.

It is difficult to understand why little children should be required to get up so early. The explanation seems to be that all the members of the family—adults, children, and babies—follow the same hours, both for retiring and rising. A 7-o'clock bedtime for an adult means that by 3 or 4 o'clock in the morning he is ready to get up. The children may be required to conform to the hours of their elders, or if the whole family sleeps in the same room the children are disturbed when their parents rise, so get up with them.

It is probable that one mother gave the explanation for others as well as herself when she said of her 4-year-old child: "Sometimes he gets up at 3 o'clock when I do; but if he isn't up by 4 o'clock, I wake him, because I want to learn him to be smart." There seemed to be a general belief that a child who was not up to eat breakfast with the family, no matter how young the child nor how early the breakfast hour, would never amount to anything.

A separate bed in a separate room is usually considered the ideal sleeping arrangement for a child. Few of the children in this study were thus provided for. Only 18 of the 256 included slept alone; 106 slept two in a bed; while more than half (132) slept three or four in one bed. Rooms were crowded as well as beds. Only 4 children slept in rooms by themselves, while half (128) shared rooms with four or more other persons. Thirty-six children were sharing rooms with 5 others, 15 with 6, 26 with 7, and 4 with 8.

This does not necessarily indicate crowding as determined by the number of cubic feet of air per person. The room was often large enough to accommodate two or three beds and yet give ample space to be used as a sitting room; not infrequently, however, it was small and distinctly crowded. But disregarding the size of the room altogether, it can not be doubted that the sleeping conditions of many children were not conducive to either their physical or their moral well-being. A child sleeping one of four in a bed, in a room with as many as eight occupants, can scarcely have peaceful, undisturbed rest. Moreover, six, seven, eight, or nine persons—adults, small children, grown boys and girls—can not be thus herded in one sleeping room without endangering moral standards.

In the winter season, when this study was made, 205, or 80 per cent, of the children either removed only a few outer garments at night

near clothes. If they didn't they would freeze to death." Not the failures to attain the standard in this particular can be counted for on these grounds, however. It was evident that provision of suitable sleeping garments did not enter into the ordinary standard of living of the locality.

FRESH AIR.

Fresh air in abundance day and night is requisite to the proper health of children. In the district studied it was the requirement most commonly fulfilled, but from compulsion and not from choice. It is probable that most of the children would not have had any fresh air at night if it had not been for poor housing, for 93 per cent of them were sleeping in winter in rooms the windows of which were not opened. On account of the poor construction of houses, however, owing to tilting in cracks in floors and walls and loose-fitting doors and windows, most of the children were receiving abundant fresh air. Only about 6 per cent, in fact, were to be regarded as having insufficient fresh air at night; these children belonged to the families who lived in the better houses and were able to exclude fresh air by keeping windows closed. Improvement in the housing conditions of the community, therefore, sorely needed as it is, must be accompanied by education concerning the value of fresh air.

The greater number of children spent considerable time out of doors, even in the winter. More than three-fourths—79 per cent—were out for at least 2 hours a day in winter and 6 hours daily in summer. Some of the younger children, and older ones who had inadequate clothing, were out of doors less in the wintertime.

wintertime. "No, I don't wash them plumb off nary time, all cold weather," answered one mother. "I wash their feet, neck, and ears once a week." Another mother's answer to the question regarding winter bathing was, "I don't never do that in cold weather! I wash their feet when they are going somewhere." Still another explained that when she had had a fireplace she had made it a rule to bathe the children twice a week, but now that they were living in a "little old open house" it was not easy and they were bathed less frequently.

It is easy to censure a community for upholding no higher standard of personal cleanliness, but in view of the cold houses, the lack of privacy, and all the difficulties involved in carrying and heating water for bathing, that so much was accomplished under such conditions seems surprising.

CARE OF TEETH.

The children's teeth were very generally neglected. Eighty-two per cent of the children, 211, did not own a toothbrush, and only 15 of the 45 who did, brushed their teeth as frequently as once a day; 29 brushed them irregularly, and one confessed that although he had a brush he never thought to use it. A very few who owned no brushes made some attempt to clean their teeth occasionally in other ways. Three children of one family about weekly used dogwood brushes of their own making; two other children cleaned their teeth with cloths. Such irregular and ineffectual attempts are far from adequate, however, and may for the most part be disregarded. Less than 6 per cent of the children, the 15 who brushed their teeth as often as daily, may be considered as giving their teeth even a minimum of care.

The teeth were found to be in the condition which might be expected from this lack of care. Of the 149 children who were given physical examinations, 82 per cent had conspicuously dirty teeth. The 27 children not so described were chiefly the younger ones whose teeth had not had time to become much coated, and the few who regularly brushed their teeth.

Not only was lack of care shown by dirty teeth, but by decayed teeth as well. Of the children examined, 77.8 per cent were found to have one or more teeth decayed; 31 per cent of those 6 to 11 years of age had one or more permanent teeth in this condition.

CONDITION OF THE CHILDREN'S BOWELS.

In a consideration of nutrition the condition of the bowels is important. Constipation not only may be the result of an unsuitable diet, but also may operate as a direct cause of undernutrition by decreasing the appetite and the total amount of food eaten.

It is interesting to note that not one mother reported that her child was constipated. Ten children were reported to be somewhat irregular, but 245, or 96 per cent of all the children studied, were, according to their mothers' statements, absolutely regular. The extremely plain diet, which often consisted largely of whole corn meal containing the bran, and was therefore laxative, together with abundant exercise in the open air and the simple, regular habits of living probably helped in no small measure to make constipation uncommon. It is also probable, however, that many mothers in reality knew little about their children's habits in this respect and that children became constipated without the mothers' knowledge and eventually began to feel sick from the effects. Then mothers, for the "sickness," not for constipation, gave some medicine—"black draught," perhaps to correct the evil. While fully 70 per cent of all the children were never given any medicine to assist bowel movement, 69 children—27 per cent—whenever they were sick were given a cathartic.

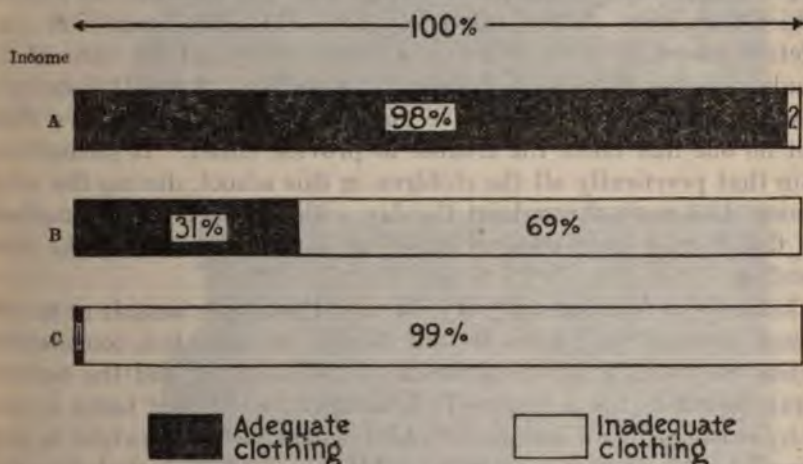


CHART VIII.—Clothing in relation to income.

CLOTHING.

Inquiries regarding clothing were made to discover whether the children had garments which gave them adequate protection from the weather. Only three-fifths of the children were found to have at least the following: Shoes, an overcoat or other extra wrap, and some kind of winter underwear. Sometimes, however, the garments were so poor and thin that they could not possibly afford much warmth. Only about one-fourth of all the children, 27 per cent, were found to have clothing which could furnish adequate protection from the elements.

That poverty was largely responsible for this situation seems evident from Chart VIII, for it will be noted that almost all the chil-

dren (98 per cent) in the highest income group had adequate clothing, while practically the whole (99 per cent) of the lowest income group had clothing which was totally inadequate for winter wear.

SCHOOLING.

The area studied comprised five school districts. Terms were short and attendance poor. Cold weather, inadequate clothing, distance from school, and the bad condition of the roads contributed to this poor attendance.¹³ Many children lived a mile or more back in the mountains and the lanes which led to their homes were bad beyond description. It was often literally impossible for a child to trudge a mile or more in the thick, wet clay of the roads. Moreover, the numerous streams were commonly without bridges, and when swollen were too deep for a child to cross on foot.

In one school district the only way for about half the children to get to school was by a road down which for some distance ran a creek, which they were obliged to wade. Even the schoolhouse was completely cut off from the road by a stream which, at the time of the study, was too wide for a child to jump across. A small board or a few stepping stones would have made it possible to cross dry shod, but no one had taken the trouble to provide either. It seemed certain that practically all the children in this school, during the rainy season, had to sit throughout the day with wet feet. Many mothers in the district kept their children at home when the creeks were swollen.

It has been found among city children that study outside of school, "home lessons" and music lessons chiefly, are often to a considerable extent responsible for undernutrition. The worry and the nervous strain resulting are a menace to health, and additional harm is done if by reason of home lessons the child is deprived of his right to play long hours daily in the open air. Of the children included in this investigation, only 45 were doing any studying at home, and these studied voluntarily and for short periods only.

¹³ The compulsory school attendance law of Kentucky in effect in rural school districts at the time of the study required all children between the ages of 7 and 12 years, inclusive, to be enrolled in and to attend some public or private day or parochial school each school year for the full term of said school, exempting only children taught at home and given equivalent instruction, and those not in proper physical or mental condition to attend school. The penalty for a parent's failure to cause his child to attend school as required by this law was a fine of not less than \$5 nor more than \$20 for each offense. The law also required that the school term should be not less than six months (120 days).



SCHOOL CUT OFF FROM ROAD BY CREEK.
Children must wade this "moat" to get to the schoolhouse.



VIEW OF A ROCKY MOUNTAIN ROAD.
The road referred to over which the produce from an adjoining county must be hauled to market.

SUMMARY AND CONCLUSIONS.

This study of a small mountain section of Kentucky included 123 families in which lived 256 children from 2 to 11 years of age. The heads of households in 103 families were farmers, but only 59 were occupied in farming alone, while 44 supplemented work on their farms by some other occupation.

PHYSICAL CONDITION OF THE CHILDREN.

A total of 149 children were given physical examinations. Half this number had enlarged or diseased tonsils; more than a fourth showed symptoms of adenoids; over three-fourths had carious teeth. Only 7 per cent of the children were ranked excellent in nutrition; 18 per cent, good; 35 per cent, fair; 34 per cent, poor; and 6 per cent, very poor.

HOME CONDITIONS.

The income in the homes of 42 children was considered adequate; in the homes of 95, its adequacy was doubtful; 119 children, or 47 per cent, were living in homes clearly incapable of providing the essentials of a simple standard of living. Sanitary facilities were poor; 56 per cent of the families had no toilet. More than half the families (55 per cent) depended for their water supply upon a spring, stream, open well, or other source which might suffer pollution.

The family food supply was restricted both in kind and amount and the family diet was in consequence monotonous and sometimes so limited as not to furnish all the elements necessary. Milk and whole corn meal were the redeeming features of the diet, but in many homes even the supply of milk was too limited, especially at certain periods, to insure an adequate diet, though 80 per cent of all the families kept one or more cows.

THE DIET AND CARE OF THE CHILDREN.

Only 28 per cent of the children were having a diet which probably included all the constituents necessary to nourish their bodies, provided enough was eaten and the body was able to utilize it. The diets of 27 per cent were clearly inadequate for the needs of growing children. In other words, nearly three-fourths of the children were living on diets of either doubtful adequacy or certain inadequacy.

Fruit and vegetables occupied a minor place in the children's dietary; beans were the predominating vegetable; wild blackberries were practically the only fruit, either fresh or canned, 54 per cent of the children had. Eggs were almost entirely absent from the winter diet and even at the time of greatest yield were eaten by only 62 per cent of the children as often as twice a week. Seventy-seven per cent of the children had meat daily or oftener, but since meat in this community was usually fat salt meat it made a very questionable contribution to the protein in the dietary. It was estimated that 72 per cent of the children had at least a pint of milk daily; 70 per cent had corn bread made of whole corn meal or biscuits made of bolted white flour. Coffee was used by 55 per cent of the children, though only 34 per cent drank it four or more times a week. Eating between meals was indulged in by 43 per cent to such an extent as probably to be harmful.

Of the children in the highest income group, 74 per cent, as compared with only 12 per cent in the lowest, were receiving diets which could be considered adequate. The diet grades corresponded closely to the nutrition grades as revealed by the physical examinations.

Chiefly because of the early rising hour, but 45 per cent of the children were having sufficient hours of sleep. Only a little more than a fourth of the children had clothing which could be considered sufficient to furnish adequate protection from the elements. Care of the teeth was very generally neglected.

POSSIBILITIES OF IMPROVEMENT.

There is urgent need in the community studied for improvement in the conditions affecting the health and welfare of children. In order to better the physical condition of the children, adequate diets, improved housing, more adequate clothing, and higher standards of general hygiene are essential.

If the diet of the children is to be improved, the family food supply must be enlarged. This will involve increase in the amount and quality of milk; improvement of gardens; raising and canning or drying more vegetables; greater utilization of the wild blackberries, until fruit culture can be developed; and increase in the yield of eggs until enough are available both for family consumption and for selling. The use of meat could in many cases be restricted without harming the diet. The use of sorghum and the use of beans, particularly those dried without removing the pods, could well be extended.

Soil improvement and education in better farming methods would improve economic conditions and dietaries. Better housing, more adequate clothing, and generally higher standards of living would follow. Instruction of the mothers and fathers in the health needs and care of children is also essential.

In such a program a county agricultural agent, a county home demonstration agent or nutrition specialist, and a county public health nurse could render valuable service. Education in diet and hygiene through the public school would also be of assistance. At the time of the study the county had an agricultural agent on part time, and much had been accomplished through his efforts. The territory covered was too large, however, and a full-time agent could be employed with advantage.



SURNAME

Y

STATE

A. Child. M. F. W.		Control of parents (spec.).	Sym.
1. Age:	yrs.		
2. Height:	ly. 32. Ch. Under 2, 2-5, 6-11, 12-14,		
Average	4, F. M. Total oth., ad. ch. Total h. h.		
4. Appearance: (a)	Encial status: (a) Farmer, oth. (spec.)	Income	
(b) Color: Sang.	Farm: Acres cult. OT (C.S.) H. wages		
(d) Flesh: Firm	Stock: Cattle milch c. hogs horses		
(f) Shoulders:	mules sheep chickens		
(g) Chest: Nor.	Ev. prosp: Tel, auto, h. help, sew-m, piano, victrola.		
5. Activity: (a) Inact	oth. (spec.).		
(b) Nervous. N.	Ev. poverty;		
(c) Disposition	(sing: (a) No. rooms Used for sleeping.		
6. Teeth: Total	b Fdn. N, piles, oth. (spec.).		
Decayed (temp.	Close fitting doors and windows N.		
7. Tonsils: Nor., enl.	Walls and ceiling: Plas. ceiled, oth. (spec.).		
8. Adenoids: N. prob			
9. Med. exam., N.	Sing: Furn., stove, firepl. Cook; stove, firepl.		
	itation: (a) Toilet, N; privy, oth. (spec.).		
Hookworm N. no to	Water: Dug w., drill. w., spr., str., oth. (spec.).		
10. Summary of condit			
B. Health Habits.	Slope from privy: Up, down, N.		
11. Sleep: (a) Bed at	ly food supply.		
(b) Sleeps with	: (a) Source: Own cows; buy, amt.		
(c) Day clothes.	Yield. pres. used.		
12. Fresh air: (a) Wind	Max. period. used.		
Window open S.	Min. period. used.		
(c) Oth. means fr	Cows all dry, N. period.		
13. Cleanliness: (a) H	Milk supply: None; buy fr., amt		
(b) Face, hands.	Can'd (spec. kind.) powdered.		
(c) How often ba			
14. Care of teeth: (a) Oer:	Buy, lbs. wk. Make lbs. wk.		
15. Bowels: (a) Reg.,	ed, lbs. wk. Substitutes (spec.).		
(b) How often ca			
16. Work, play, exercistables: (a) Garden, N. Raised:			
(a) Bef. sch.			
Aft. sch.	Surplus: Sold		
Sat.			
(b) Vacations,	Stored		
(c) Home lessons	Dried		
17. Clothing: Winter u	Canned		
heavy cap, N; n			
18. School: Grade	Oth. veg. used. W.		
Reason for non.	Oth. veg. used. S.		

STATE OF TEXAS

1900

Case	Date	Amount
1000	1900	1000
1001	1900	1000
1002	1900	1000
1003	1900	1000
1004	1900	1000
1005	1900	1000
1006	1900	1000
1007	1900	1000
1008	1900	1000
1009	1900	1000
1010	1900	1000
1011	1900	1000
1012	1900	1000
1013	1900	1000
1014	1900	1000
1015	1900	1000
1016	1900	1000
1017	1900	1000
1018	1900	1000
1019	1900	1000
1020	1900	1000
1021	1900	1000
1022	1900	1000
1023	1900	1000
1024	1900	1000
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1038	1900	1000
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1040	1900	1000
1041	1900	1000
1042	1900	1000
1043	1900	1000
1044	1900	1000
1045	1900	1000
1046	1900	1000
1047	1900	1000
1048	1900	1000
1049	1900	1000
1050	1900	1000

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58
54p

U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

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CHILDREN'S BUREAU

GRACE ABBOTT, Chief

PHYSICAL STATUS
OF PRESCHOOL CHILDREN

GARY, IND.

BY

ANNA E. RUDE, M. D.



Bureau Publication No. 111



WASHINGTON
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PHYSICAL STATUS OF PRESCHOOL CHILDREN,
GARY, IND.

INTRODUCTION

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, April 29, 1922.

SIR: There is transmitted herewith a report on the Physical Status of Preschool Children, Gary, Ind., by Dr. Anna E. Rude, director of the child hygiene division of the Children's Bureau. The investigation on which the report is based was planned by Dr. Grace Meigs Crowder, formerly director of the child hygiene division of the bureau. All the field work of the investigation was in charge of Doctor Rude, and the material has been organized by her with the assistance of Caroline Legg.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

HON. JAMES J. DAVIS,
Secretary of Labor.



PHYSICAL STATUS OF PRESCHOOL CHILDREN, GARY, IND.

INTRODUCTION.

In connection with the social and economic study of infant mortality and the preschool child in Gary, Ind., made in 1918 by the United States Children's Bureau, an investigation to determine the physical condition of the children was conducted by the hygiene division of the bureau. In all, 4,348 individual examinations of children under 7 years of age were made during the six-month period extending from April to October.

The splendid interest and hearty cooperation of the Gary school authorities made possible the systematic examination of practically all children under 7 years of age who were attending the kindergartens and primary grades in all the public schools and in three parochial schools.

The school examinations occupied the first three months of the investigation, following which the examinations were conducted in children's health conferences. The first conference center was in a vacant store in the center of the business district on the North Side of Gary. The conference rooms were open from 9 o'clock in the morning until 4.30 o'clock in the afternoon every day except Saturday and Sunday. Children were examined by appointment only. The second conference or consultation center was opened for the last two months of the study on the South Side of the city, where a large proportion of the foreign population lived.

In order to stimulate interest in the health conferences and instruct the public as to their general purpose, the cooperation of the Gary Children's Year Committee of the Council of National Defense was enlisted. This committee secured active interest and cooperation from the mayor, the women's organizations, the men's clubs, and the school authorities, and conducted a poster contest on the subject of child care in the Gary schools. Two men's organizations, the commercial club and the chamber of commerce, donated \$75 for prizes in the form of thrift and war-savings stamps.

An exhibition of posters from all the school grades in a down-town shop window, prior to the awarding of the prizes, helped to arouse

interest and attract attention to the forthcoming conferences, where a large collection of posters was finally displayed.

Another feature of the conferences which attracted considerable attention was the exhibit of small models which included a bed properly prepared for a mother at confinement, baskets and cribs for the baby, the necessary bath equipment, utensils for preparing food and Pasteurizing milk, an iceless refrigerator, play pens, simple and cheap homemade screens, etc. There were also models of infants' clothes, and paper patterns from which the mothers might cut duplicates if they so desired. Simple meals for the preschool child were shown in a glass case, and the values of particular kinds of food were explained by a nurse. Children's Bureau publications dealing with prenatal care and the care of infants and young children were displayed, and given free to persons desiring them. Much interest was evinced in these exhibits, and in the wall charts which pictured various phases of child care with warnings and suggestions to mothers.

SCOPE OF STUDY.

Tabulations were made of the records of 3,125 children whose ages ranged from 2 to 7 years,¹ and of 994 infants under 2 years of age. The data relating to the latter are presented in Appendix B, but the descriptions of methods include those used in the examinations both of infants and of older children. In both age groups the distribution by sex was fairly even. The older group included 1,555 boys and 1,570 girls. It was possible to make certain correlations for this group with items on the family schedules which were taken for all of these children in the general study of children of preschool age made by the Children's Bureau.²

STAFF.

The regular working staff consisted of three physicians, two nurses, and four clerical assistants.

A specialist from Chicago was engaged for one day a week to examine all children who had been found upon examination to have eye, ear, nose, or throat defects. These special examinations were discontinued after the conferences were begun, owing to the fact that the majority of the examinations in the conferences were of infants and the comparative infrequency of these defects in infancy made the services of the specialist seem unwarranted.

During the examinations in the schools, the school nurses were loaned to the Children's Bureau staff for almost full-time assistance.

¹ Included in this group were 220 children who had passed their seventh birthdays between the date of beginning the study and the date of the physical examination. Since the majority of these 220 children were still less than 7½ years of age, and since data concerning them appeared in the family schedules which had been taken and had already been incorporated in other reports on the Gary investigation, they have been included in all discussions where ages are not distinguished; but where ages are distinguished this group is not separately discussed.

² *Children of Preschool Age in Gary, Ind.* (In press.)

They determined from the school register what children were eligible for examination, notified parents as to date and time of examination, invited them to be present, and brought the children in turn to the examination room. The interest of the parents was most encouraging; in several of the school districts approximately 75 per cent of the mothers were present for the examinations. The nurses also helped with the undressing and dressing processes. During the entire study they rendered valuable assistance by following up cases reported by the physicians as in need of special attention. One nurse acted as interpreter, such service being indispensable during the conference on the South Side of Gary, where the families of the foreign-born predominated. A list of the defects noted upon examination was transcribed on the school physical examination card for a permanent school record, a duplicate of which was sent by the school authorities to the parents.

METHODS AND STANDARDS USED.

The chief value of this report on the physical condition of the preschool child in a typical industrial center lies, perhaps, not so much in the data gathered as in the presentation of the methods and standards used in the study. The dearth of definite information regarding the physical condition of the preschool child is noteworthy; the data obtained in this investigation are offered as the result of uniformly careful examinations. The usual lack of uniformity in methods of examination, record forms, etc., makes for apparent unreliability in data, and this has a tendency to lower rather than to raise standards. It is doubtful if any physical examination record form or method of examination would meet with universal approval. The methods and standards used in this study are not offered as ideal; but since there is a generally recognized need for standardization in all phases of child-welfare work, the plan has been given in detail in the hope that the report may serve to some extent as a handbook for similar scientific investigations as well as for the less technical popular health activities of both private and Governmental organizations.

In order that data gathered in this study might conform to the standard of exactness required in making statistical tabulations, it was necessary to plan definite standards for recording observations. The difficulties involved are readily recognizable, since much of the information secured through ordinary physical examinations shows variation, according to the individual examiner's judgment. While such data may be sufficiently accurate for clinical purposes, they do not have the degree of conciseness and uniformity necessary for statistical tabulations.

GENERAL METHOD OF CONDUCTING EXAMINATIONS.

The following general procedure was adhered to almost without exception throughout the six months devoted to the physical examinations recorded in this study.

The child was first given the vision and hearing tests, in a room specially set aside for the purpose. This was done first in order to eliminate the possibility of any nervous strain after subjection to the physical examination. It was most important in testing eyes and ears to gain the child's undivided attention, for if it was at all strained or unnatural the results were necessarily less accurate. Moreover, by subjecting him at the start to an active rather than a passive examination, i. e., to one in which his own faculties were exercised, the child's cooperation and confidence were secured for the more trying ordeal of a complete physical examination. The details of the vision and hearing tests and the method of grading will be described subsequently.³

After the tests of sight and hearing were completed the child was directed to a dressing room and completely undressed by a nurse or parent; separate rooms were provided for boys and girls. As soon as the clothing was removed the child's body was covered with a clean square of flannelette fastened around the trunk and falling to the knees, and the height and weight were taken. This was done either at one end of the large room in which the examinations were made or in a smaller separate room, according to available facilities. After the record of height and weight was made the child was ready for the doctor.

The physical examination was strictly private, each physician having a curtained booth about 8 by 10 feet. The examining table was covered with a clean white sheet and provided with all necessary equipment for making a thorough physical test, including stethoscope, thermometer, tongue blades, culture tubes and slides, standard tape measures and rulers, paper towels, facilities for sterilizing instruments, and celluloid toys which were used to divert the attention of younger children during the more trying parts of the examination. A clerical assistant at one end of the table recorded the details of the examination as dictated by the doctor, and noted such facts as date of birth, age at entering school, grade attained, and history of previous illnesses.

A record of height and weight, vision and hearing grades, and defects found, if any, together with suggestions concerning their correction and dietary advice applicable to the individual child, were given to the mother before she left the conference rooms.

³ See pp. 23 and 24.

PHYSICAL EXAMINATION RECORD FORM USED.

A physical examination record form was prepared from which statistical data could easily be transcribed. While to the average physician this form may appear unnecessarily detailed for practical use, experience has shown that the system of establishing uniform standards and then requiring every item to be checked is probably the only means of insuring sufficiently accurate and detailed information in routine physical examinations.

The practicability of this particular record form has been tested by use both in this study and in subsequent work. Some of the items could well be omitted, and the form could be made practical for continued use only by providing space for the records of repeated examinations on the reverse side of the card. The general arrangement, however, has proved satisfactory and practical from a statistical standpoint.

PHYSICAL EXAMINATION RECORD FORM

Gary, Ind., S. N.

U. S. DEPARTMENT OF LABOR.
CHILDREN'S BUREAU.

C. B.

SURNAME..... FATHER..... CHILD..... ADDRESS..... DATE..... 1918.

SYNL. SYNL.		CHILD: I. M. F. 2. Born 191 . 3. Age yrs. mos.		4. Entered Kindergarten, N., at yrs. (b) First grade, N., at yrs.	
		PHYSICAL EXAMINATION.			
GENERAL: 5. Weight lbs. os. 6. Height in.		7. Anemia, N.		8. Nutrition: Excel., G., P., V.P.	
9. Temp. ° 10. Vaccinated, N.		(a) Age yrs. (b) Scar, N.			
HEAD: 11. Size: Normal, large, small.		Circumference in.			
12. Shape: Normal, abnorm. (spec.).		13. Fontanelle: Closed, open		cm.	
14. Craniofacies, N.		15. Abnormal condition, N.			
16. <i>Diagnosis:</i>		EYES: 17. Vision (a) R. (b) L. (c) Imposs. to test.			
18. Defects.		Defects.		N R L N R L	
(a) Blepharitis.....					
(b) Stye.....					
(c) Prosis.....		(f) Conjunctivitis: N			
(d) Corneal opacities.....		Acute.....			
(e) Corneal ulcer.....		Chronic.....			
		Phlyctenular.....			
		(g) Strabismus.....			
		19. Glasses, N.			
20. Other abnorm.		EARS: 22. Hearing: R. ft. L.		(b) Chronic, N, R., L.	
21. <i>Diagnosis of Sp.</i>		23. Otorrhoea: (a) Acute, N, R., L.			
22. Other abnorm.		24. Other abnorm.			
23. <i>Diagnosis of Sp.</i>		MOUTH: 26. Teeth: (a) Temp. No. Decayed No. Filled No			
24. Other abnorm.		(b) Perm. No. Decayed No. Filled No. 27. Malocclusion, N.			
25. <i>Diagnosis of Sp.</i>		28. Gum abscess, N.		29. Other abnorm.	
NASOPHARYNX: 30. Mouth breathing, N.		31. Nasal discharge, N.		32. Nasal obstr., N.	
33. High arch palate, N.		34. Tonsils: Rem. (a) enlrg., N. (b) greatly enlrg., N. (c) dis. N.		35. Other abnorm.	
36. <i>Diagnosis of Sp.</i>					
GLANDS: 37.		Palp-able.		En-larg'd.	
(a) Occipital.....		Y N Y N Y N Y N Y N		Gr'ty enlrg. (spec.)	
(b) Submaxillary.....		Y N Y N Y N Y N Y N		N N N N N N N N	
(c) Cervical.....		Y N Y N Y N Y N Y N			
(d) Axillary.....		Y N Y N Y N Y N Y N			
(e) Epitrochlear.....		Y N Y N Y N Y N Y N			
(f) Inguinal.....		Y N Y N Y N Y N Y N			
(g) Other.....		Y N Y N Y N Y N Y N			
HEART: 38. Heart.		(a) Apex beat displ. N. (b) Enlarged N. (c) Murmur N. (loc.)		(d) Transmitted back, acilla, sternum, N.	
39. Heart disease, N. <i>Diagnosis:</i>		Lungs: 40. Chest: (a) Expansion: Normal, abnorm. (spec.)		(b) Premature Normal, deerr., ulcer.	
(c) Pericardium Normal, deerr., ulcer.		(d) Rales: N. (spec.) loc.		(e) Other defects, N. kind loc.	
41. Other defects, N. <i>Diagnosis:</i>		42. Respiratory dis., N. <i>Diagnosis:</i>			
SKIN: 43. Pediculosis: (a) body, N. (b) scalp, N.; insects, N.; nits, N.		44. Eczema, N. (loc.)		45. Acne, N.	
46. Hypertrichosis, N.		47. Impetigo, N.		48. Infected sores, N.	
49. Scabies, N.		50. Ringworm: (a) scalp, N. (b) body, N.		51. Other conditions.	
ABDOMEN: 52. Distension, N.		53. Tenderness, N. (loc.)		54. Enlarged liver, N.	
55. Enlarged spleen.		56. Hernia, N.: umbilical; inguinal, R.; L.; double; femoral, R., L.; double. 57. Other defects.		BONY AND MUSCULAR SYSTEM: 58. Beaded ribs, N.	
59. Harrison's groove, N.		60. Enlarged epiphyses, N.		61. Round shoulders, N.	
62. Winged scapulae, N.		63. Scoliosis, N.		64. Lordosis, N.	
65. K. syphosis, N. (loc.)		66. K. knockknee, N.		67. Bow legs, N.	
68. Flat foot, N.		69. Pigeon breast, N.		70. Club foot, N. (spec.)	
71. Arthritis, N. (spec.)		72. Paralysis, N. (spec.)		73. Other defects (cong. and acq.)	
NERVOUS SYSTEM: 74. Speech defects, N. (a) Stuttering, N. (b) Stammering, N. (spec.)		75. Tte, N. (spec.)		76. Chorea, N. (spec.)	
77. Other defects.		78. Nervous dis., N. <i>Diagnosis:</i>			

[PHYSICAL EXAMINATION RECORD FORM.]

[RECORD FORM—REVERSE.]

GENITALIA: 79. Male: prepuce adherent, contracted, normal.

80. Female: vaginal discharge, N.

MENTAL CONDITION: 81. (a) Normal, N. (b) Defect app. (spec.).

(c) Abnormality susp. (spec.)

82. LABORATORY FINDINGS:

83. PREVIOUS ILLNESS: (a) Contagious:

(b) Respiratory:

(c) Digestive:

(d) Other:

84. BAD HABITS:

85. SUMMARY OF DEFECTS AND DISEASES:

86. RECOMMENDATIONS:

108178°—22—2

INSTRUCTIONS ACCOMPANYING PHYSICAL EXAMINATION SCHEDULE.

Every question on the schedule must be checked. If abnormal, check this word or the condition listed; if normal, check N, meaning "No" or not abnormal. Care should be taken that the check is in the letter or word intended. Carelessness in checking means inaccuracy in tabulations, and schedules with omissions deplete the total base or are thrown out.

GENERAL.

(5)⁴ **WEIGHT.** To be taken without clothes.

(6) **HEIGHT.** To be taken without shoes.

Measuring board to be brought down until horizontal part just touches child's head firmly while perpendicular part is pressed against the wall. Most mistakes are made in reading; therefore measurements to be taken twice, once before and once after examination, and entry made on record after the second measurement.

(7) **ANEMIA.** To be determined by inspection of color of mucous membranes, especially conjunctivae.

(8) **NUTRITION.**⁵ "Excellent" indicates a condition superior to "good." "Good" is to be checked if the child's weight is within a 10 per cent deviation below average weight for height. "Poor" to be checked when weight is below 10 per cent deviation from average weight for height and when supervision is required. "Very poor" to be checked where weight is more than 10 per cent below average weight for height and medical treatment is required. "Poor" or "very poor" is always to be noted under Summary and Recommendations.

(9) **TEMPERATURE.** To be taken only if symptoms indicate.

(10) **VACCINATED.** Unless the mother is with the child it may not be possible to ascertain the age at which he was vaccinated for smallpox, but it may be learned from the teacher whether or not it was done before he entered school.

HEAD.

(11) **SIZE.** If abnormal, the fronto-occipital circumference is to be measured with tape and the measurement recorded.

(12) **SHAPE.** If abnormal, "square head," "hydrocephalic," "oxycephalic," or "scaphocephalic" may be specified.

(13) **ABNORMAL CONDITION.** Here may be noted abnormal conditions of scalp, features, hair, etc.

EYES.

(17) **VISION.** To be tested by one person, using "illiterate" chart.⁶ All cases of defective vision to be listed and referred for consultation with specialist.

(20) **OTHER ABNORMALITIES.** Such conditions as nystagmus, etc., to be noted here and every case to be listed for consultation with the specialist.

⁴ Figures refer to items on record form.

⁵ See page 36.

⁶ For details of vision testing, see page 23.

EARS.

(22) HEARING. To be tested by one person, using "whispered voice."⁷ If hearing is defective or there is any discharge, the child is to be listed and referred to the specialist for examination for cerumen, retracted drums, and adenoids.

MOUTH.

(27) MALOCCLUSION. Includes any condition causing an abnormal bite.

(29) OTHER ABNORMALITIES. Here should be noted general conditions of cleanliness and types of teeth, such as syphilitic, rachitic, and those devoid of enamel, abnormal condition of gums and mucous membranes, badly coated tongue, offensive breath, etc.

NASOPHARYNX.

Children with colds are to be excluded from examination until well.

(30) MOUTH BREATHING. To be tested by closing the mouth to see if child breathes easily through nostrils.

(32) NASAL OBSTRUCTION. To be tested by closing each nostril in turn to see if child breathes easily through the open nostril.

(34) TONSILS.⁸ "Rem." means removed; "Enlarged" indicates moderate enlargement; "Greatly enlarged" are those nearly filling the throat; "Diseased" tonsils are those showing (1) cheesy plugs, (2) localized injections of the surrounding vessels. All positive entries in Nos. 30 to 36, inclusive, are to be listed and referred to specialist for absolute diagnosis.

(35) OTHER ABNORMALITIES. Here may be noted any malformations such as harelip, cleft palate, bifid uvula, etc. All abnormal conditions of the nasopharynx to be listed and referred to the specialist for absolute diagnosis.

GLANDS.

(37) "ENLARGED" glands are those over $\frac{1}{4}$ inch in diameter; "Greatly enlarged" glands are those 1 inch in diameter or over. In looking for the infection associated with enlarged glands, look among other causes for bites on the body and if present, examine clothing for pediculosis and the head for nits.

(37-g) OTHER—SPECIFY. Includes thyroid, etc.

HEART.

(38) HEART. Enlargement to be determined by axillary border and apex beat if latter is below the fourth or fifth interspace and outside the mammary line.

LUNGS.

Percuss the paravertebral regions and listen with the stethoscope over the bases and the paravertebral regions.

(41) OTHER DEFECTS. Asymmetry, abnormal shape, poor development, etc.

⁷ For details of hearing testing, see page 24.

⁸ For details on indications for recommending removal of tonsils and adenoids, see page 50.

SKIN.

(51) OTHER CONDITIONS. May be included general condition of the skin such as cleanliness, rough, dry, clammy; also birthmarks, furunculosis, urticaria, etc.

ABDOMEN.

(54) LIVER. Is "enlarged" if more than 1 inch below border of ribs. Specify in inches.

(55) SPLEEN. Is "enlarged" if palpable; "moderately enlarged" if 1 inch below border of ribs; "greatly enlarged" if felt as tumor mass in abdomen.

(57) OTHER DEFECTS. Note should be made of distension due to tympanites as in rickets, or ascites, etc., and measurements taken at a level of the umbilicus, if greatly enlarged from any cause.

BONY AND MUSCULAR SYSTEM.

(68) FLAT-FOOT. Child to be examined standing in stocking feet or barefoot, and height of arch recorded in inches. This is to be measured with ruler held perpendicularly from floor to tubercle of scaphoid bone, which is the top of the arch. Observe child's walking and record position of feet, i. e., toes straight ahead, toes in, toes out.

(71) ARTHRITIS. If present, try to get a history of previous infections.

(73) OTHER DEFECTS. Note flabbiness of muscles, clubbed fingers, tuberculous bone affections, etc. Record here also in every case whether or not pronation of feet is present, i. e., rotation of the axis of the foot.

NERVOUS SYSTEM.

(77) OTHER DEFECTS. Note to be made of extreme nervousness, etc.

MENTAL CONDITION. Note to be made of sluggish or active mentality and confer with teacher if questionable.

LABORATORY FINDINGS.

In this space may be recorded results of urinalysis, cultures or smears, from reports furnished by the Gary Board of Health laboratory.

PREVIOUS ILLNESS.

This information may be obtained only in case the mother accompanies the child and can make apparently reliable statements.

(83-d) OTHER. General diseases such as rheumatism, malaria, intestinal parasites, etc.

BAD HABITS.

(84) Such as finger sucking, masturbation, nail biting, perverted appetites, enuresis, etc. Information probably can be obtained only from mother or teacher.

SUMMARY OF DEFECTS AND DISEASES.

To include all checked defects found in general examination.

RECOMMENDATIONS.

These are to be such as will correct or improve defects found by referring to specialists—correction of habits, dietary and general hygienic advice.

MEASURING AND WEIGHING.

In an attempt to secure accurate figures on standing height and nude weight, these measurements were taken largely by one specially instructed person in order to eliminate, so far as possible, personal variations. Each measurement was made twice, once before the physical examination and once after, the second figure serving as a check on the previous one.

Height.

The measuring apparatus consisted of two pieces as follows: (1) A blue-print paper measuring scale.* The scale was prepared from a standardized meter stick secured from the United States Bureau of Standards, a draftsman making the tracing from which blue prints could be obtained. The strips of paper were 72 inches long and 3 inches wide, with a scale divided into $\frac{1}{8}$ -inch units. The inch lines extended across the paper and the half-inch lines were $\frac{1}{2}$ inch in length. The strips were pasted on a smooth pine board which could be attached perpendicularly to the floor, thus insuring a standard position which is impossible in the ordinary room due to wainscoting and sheathing. For the examination of infants too young to stand, the measuring strip was pasted directly on the examination table, and a board 4 by 6 inches was fastened perpendicularly to the end of the table for a headrest. (2) Square. This second essential part of the measuring apparatus was a plane to slide down over the measuring scale, when reading the height. It consisted of two pieces of wood, each 6 inches long, 4 inches broad, and $\frac{1}{2}$ inch thick, fastened together at a right angle. A crossbar on the inside served as a handle and further strengthened the apparatus, which simulated a book end with a crossbar.

The measurement of standing height was made by having the child stand erect, arms hanging naturally at sides, heels together, back and the back of the head (the eyes in a horizontal plane) against the board to which the measuring scale was attached. The "book end," as the square was sometimes called, was brought down firmly on the top of the head and the reading taken. The 4-inch width of

* This type of scale was prepared after consultation with Dr. A. Hrdlicka, anthropologist of the Smithsonian Institution.

the measuring apparatus was a definite advantage in that the inch lines across the printed scale insured an accurate horizontal position of the square because it must not only touch the top of the head firmly but also be parallel to the longer lines across the scale.

The reclining length of infants was taken by pushing the square firmly against the soles of the feet, which were held at right angles to the table.

Weight.

For weighing children who could stand, an upright beam scale was used. Infants were weighed on a grocer's scoop scale with a very heavy base, to which the scoop was securely riveted.

All weights were taken without clothes. The flannelette square used as a protection for the child as he came from the dressing room was removed and held in front of him by the mother or nurse as a screen while the weight was taken. So far as possible, the weighing was done by one nurse who had been specially instructed in the importance of accuracy in adjusting the balance of the scale several times daily and reading the record of weight with the beam horizontal or at mid-balance. After the physical examination the child was reweighed, and the second reading was checked up with the original figures before entry was made on the record form.

The height and weight table used as a standard was that prepared by the Children's Bureau for the weighing and measuring test during the Children's Year campaign, the averages for children at birth and for boys at 3 months having been taken from Dr. L. Emmett Holt's figures from original observation; those for children aged 6 to 48 months, from the anthropometric table compiled by F. S. Crum; and those for children aged 5 to 7 years, inclusive, from Bowditch. Since all the children included in this study were weighed without clothing and the Bowditch figures included weight of clothing, it was necessary to deduct from the latter the average weight of clothes (Bowditch's averages.)¹⁰

In order to economize time as well as to eliminate possible errors through hasty computation, this table was adapted for the use of the examining physicians, weights being shown in half-year periods, decimal or fractional pounds being changed to ounces and decimal inches to fractional inches. Weights 10 per cent below the accepted averages were also computed and arranged in a column parallel to the corresponding averages. The saving of time, the elimination of the possible chances of mathematical error, and the uniformity of method made possible are obvious. The adapted table is here given, since it offers some practical suggestions, although its form could be more conveniently arranged.

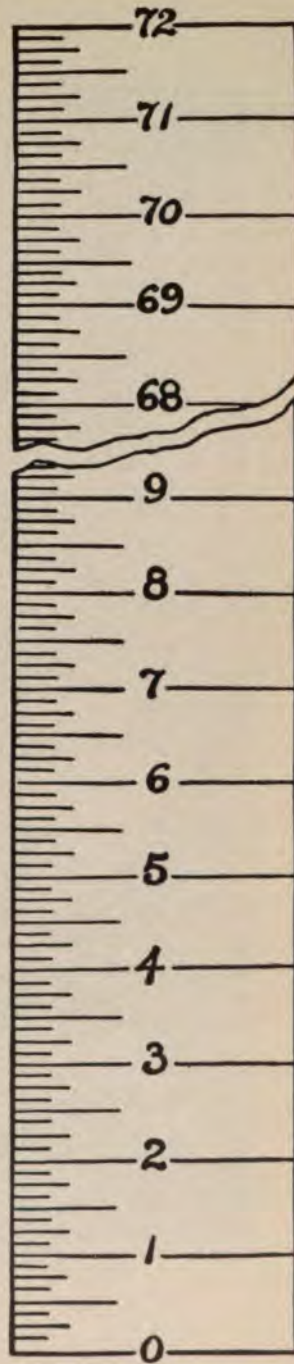
¹⁰ See *The Diseases of Infancy and Childhood*, by L. Emmett Holt, M. D., p. 19. New York, 1916.



MEASURING.



MEASURING SQUARE.



MEASURING STRIP.

Scale $\frac{1}{2}$ inch equals 1 inch.



WEIGHING IN SCOOP SCALE.



WEIGHING ON BEAM SCALE.



VISION TESTING.



HEARING TESTING.

Heights and weights of boys.

Heights and weights of girls.

Age.	Height.	Weight.		Age.	Height.	Weight.	
		10 per cent below average.	Average.			10 per cent below average.	Average.
	Inches.	Lbs. Oz.	Lbs. Oz.		Inches.	Lbs. Oz.	Lbs. Oz.
	20½	6 13	7 9	Birth.....	20½	6 8	7 3
	23½	11 11	15	3 months.....	25½	15 1	16 12
	26½	17 3	18	6 months.....	26½	15 10	17 6
	27½	17 3	19 2	7 months.....	27½	16 7	18 4
	27½	17 12	19 12	8 months.....	27½	17 3	19 2
	28½	18 5	20 6	9 months.....	27½	17 9	19 8
	28½	18 13	20 14	10 months.....	28½	18 2	20 2
	29	19 4	21 6	11 months.....	28½	18 11	20 12
	29½	19 11	21 14	12 months.....			
	29½	20 9	22 14	13 months.....	29½	18 14	21
	30	20 11	23	14 months.....	29½	19 7	21 10
	30½	21 4	23 10	15 months.....	30½	19 11	21 14
	31	21 11	24 2	16 months.....	30½	20 6	22 10
	31	22 1	24 8	17 months.....	30½	20 9	22 14
	31½	22 3	24 10	18 months.....	31½	21 1	23 6
	32	22 15	25 8	19 months.....	31½	21 6	23 12
	32	23 3	25 12	20 months.....	32	21 11	24 2
	32	23 3	25 12	21 months.....	32	22 4	24 12
	33	24 3	26 14	22 months.....	32	22 12	25 4
	33	24 5	27	23 months.....	32	23 1	25 10
	33½	24 7	27 2	24 months.....	33½	23 12	26 6
	34	25 1	27 14	25 months.....	33½	24 3	26 14
	34½	25 7	28 4	26 months.....	34	24 8	27 4
	34	26 2	29	27 months.....	34	24 8	27 4
	35	26 3	29 2	28 months.....	34½	25	27 12
	35	26 5	29 4	29 months.....	34½	25	27 12
	35	26 9	29 8	30 months.....	34½	25 7	28 4
	35½	27 7	30 8	31 months.....	35	25 14	28 12
	36	27 9	30 10	32 months.....	35	26 2	29
	36½	27 9	30 10	33 months.....	35½	26 3	29 2
	36½	28	31 2	34 months.....	36	27 2	30 2
	36½	28 11	31 14	35 months.....	36½	27 4	30 4
	37	29	32 4	36 months.....	36½	27 7	30 8
	37½	29	32 4	37 months.....	36½	27 11	30 12
	37½	29 2	32 6	38 months.....	37	27 14	31
	37½	29 13	33 2	39 months.....	37½	28 7	31 10
	38	30 2	33 8	40 months.....	37½	28 13	32
	38½	30 4	33 10	41 months.....	37½	29	32 4
	38½	30 6	33 12	42 months.....	38	29 4	32 8
	38½	30 6	33 12	43 months.....	38½	29 8	32 12
	38½	30 13	34 4	44 months.....	38½	29 11	33
	39	31 1	34 8	45 months.....	38½	29 15	33 4
	39	31 4	34 12	46 months.....	38½	30 2	33 8
	39½	32 3	35 12	47 months.....	38½	30 2	33 8
	39½	32 5	35 14	48 months.....	39	30 6	33 12
	40	33 6	37 1	4½ years.....	40½	31 13	35 6
	41	34 7	38 4	5 years.....	41½	33 3	36 14
	42	36 5	40 6	5½ years.....	42½	34 13	38 11
	43	38 2	42 6	6 years.....	43½	36 7	40 8
	44	39 10	44	6½ years.....	44½	38	42 4
	45	41	45 9	7 years.....	45½	39 8	44
	46	43 3	48	7½ years.....	46½	41 10	46 4
	47	45 5	50 6	8 years.....	47½	43 8	48 8
	48	47 12	53 1	8½ years.....	48½	45 15	51 1
	49	50 2	55 11	9 years.....	49½	48 3	53 9
	50	51 15	57 11	9½ years.....	50½	50 3	55 12
	51	53 10	59 9	10 years.....	51½	52 1	57 14

VISION TESTING.

"illiterate" chart was the one used for testing the vision of children, most of whom were too young to know the alphabet. The chart consists of eight rows of letter E's, gradually diminishing in size and turned in four different positions. The child was given a

pasteboard letter **E** and instructed how to turn it to correspond to the position of the particular letter in the chart at which the nurse pointed. The child's own fingers could also be used to indicate the position of the fingers of the **E**. At the side of each row of letters there was a number which indicated the distance in feet at which the letter should be read by a normal eye. The large letter at the top should be read at a distance of 200 feet; the other rows at 100, 65, 50, 39, 25, 20, and 15 feet.

The child was placed at a distance of 20 feet from the chart. If he could then turn his letter correctly to correspond to the letters on the 20-foot line, he was given a grade of $\frac{2}{20}$. If he could not see that line but could see the large line above, he was given a grade of $\frac{2}{20}$, the numerator of the fraction being always the distance between the chart and the child, and the denominator indicating the line which the child could see. A child who received a grade of $\frac{3}{20}$ saw only two-thirds of what he should see; one who received $\frac{4}{20}$ saw only two-fifths of what he should see. Every child whose vision grade was $\frac{3}{20}$ or less was referred to an eye specialist. If a child's vision was so poor that at a distance of 20 feet from the chart he could not see the top letter, which should have been visible at 200 feet, he was moved toward the chart until he could see it, and the distance between him and the chart was then measured. For instance, a child might receive a grade of $\frac{10}{200}$. Vision graded $\frac{2}{20}$ was considered "slightly defective" and not necessarily requiring glasses, but when a child received such a grade the mother was advised to keep his vision under observation; vision graded $\frac{3}{20}$ or worse was tabulated as "seriously defective" and requiring glasses.

Important details to be observed in testing vision by this method are:

1. Have the child stand 20 feet away from the chart.
2. Always test the right eye first.
3. Use a card to cover one eye while testing the other, being careful not to press on the covered eye.
4. Use a bright-colored pointer, such as a red penholder.
5. Do not point to the same letter consecutively, since that tends to puzzle the child.
6. Place the pointer directly under the letter, being careful not to touch the letter at any point.
7. Do not spend a great length of time on the larger letters. If you are convinced that the child sees them readily, pass on to the lower lines before the child grows tired or loses interest.
8. Always try the letters which are easiest for the child to see, and if the light is better on one side of the chart, as for instance when a lamp is used, point to the brightest letters.

HEARING TESTING.

In the hearing test the child stood 20 feet away from the nurse who made the examinations, with his head turned so that his right ear was toward her and with his finger in his left ear. The "whispered

voice" was used—simple numbers and phrases whispered on the exhalation of a breath, 66 or any other number ending in 6 being avoided. After the right ear was tested the child was faced about and the left ear was tested in the same manner. The repetition of the number or phrase heard indicated the child's ability to hear. The advantage of having the same person conduct all the hearing tests is self-evident, since individual variations in pitch of voice, enunciation, etc., in a number of examiners might result in uneven grading.

A child standing 20 feet away from the nurse and repeating correctly the whispered words, received a grade of $\frac{30}{100}$. If the child had defective hearing, the nurse advanced slowly toward him until he could hear what she was saying. The grade was then determined by measuring the distance between the child and the nurse. For instance, a child might receive a grade of $\frac{5}{100}$. All cases of defective hearing were referred to a specialist. In the tabulations, hearing was entered as "slightly defective" if the grade was between $\frac{1}{100}$ and $\frac{15}{100}$, and "seriously defective" if it was less than $\frac{1}{100}$.

INDICATIONS FOR RECOMMENDING REMOVAL OF TONSILS AND ADENOIDS.

A difficult point in the consideration of naso-pharyngeal defects in children is the decision as to what cases shall be listed as having enlarged tonsils and adenoids. The fact that standards for determining this have varied greatly among different examiners is proved by the greatly varying percentages of this defect recorded by different medical school inspectors. Specialists differ greatly in their estimate of what are enlarged tonsils and what forms an indication for their removal. This obvious difference in standards is largely due to the fact that hyperplasia of lymphoid tissue is physiological in young children, and that normal tonsils are proportionately larger in children than in adults.

In this study it was, in the first place, found necessary for statistical purposes to determine definite standards for making the entries on the record form; it was also necessary that each of the symptoms present be definitely outlined before removal of tonsils was recommended. From the standards which follow it is evident that a very conservative point of view was taken in making recommendations for removal of tonsils or adenoids.

Difficulties, of course, arise in deciding whether removal of tonsils and adenoids is indicated, when examining a group of children from many of whom no history can be obtained. The history of previous attacks of tonsillitis, and of habitual mouth breathing and snoring at night, are important factors in making the decision. In doubtful cases where no history could be obtained, no recommendation for

removal of tonsils and adenoids was made; but it was recommended that the child be examined again by a throat specialist, and the throat conditions watched.

The following was the basis on which recommendations were made for the removal of (1) tonsils, (2) adenoids, or (3) tonsils and adenoids.

1. Indications for removal of tonsils:

- (a) Greatly enlarged tonsils, practically filling the throat and making breathing difficult; or
- (b) Moderately enlarged tonsils with repeated attacks of tonsillitis, four or five a year; or
- (c) Moderately enlarged tonsils with a severe systemic infection, such as heart, joints, etc.; or
- (d) Greatly enlarged submaxillary glands, together with moderately enlarged tonsils.
- (e) Diseased tonsils; i. e., showing cheesy plugs.

Where moderately enlarged tonsils were found but the above positive indications were not present, no recommendations for removal were made.

2. Indications for removal of adenoids:

- (a) Marked mouth breathing with adenoid facies, in absence of other causes of nasal obstruction.
- (b) History of habitual snoring and mouth breathing at night (only to be obtained where the mother was present at the examination).
- (c) Chronic nasal discharge with marked excoriation of the lip (simple colds excluded).
- (d) Marked retraction of the ear drums.
- (e) Soft palate standing off from the posterior wall of the pharynx.

3. Indications for removal of tonsils and adenoids:

The indications here would be a combination of those of (1) and (2).

- A digital examination for adenoids was not undertaken in making these examinations, as it was not considered feasible. In all cases where a child was examined to see whether an operation for the removal of tonsils and adenoids was indicated, or whether the case should merely be watched, an examination of the drum membrane was made.

Mouth breathing not of marked degree (i. e., that which has not caused any facial deformity and that of a child who breathes through his nose during the examination, even though he has been observed to breathe through his mouth when not self-conscious) was not considered an indication for removal of adenoids. The recommendation in these cases was that the child be watched and that a specialist be consulted again if the mouth breathing continued.

PHYSICAL FINDINGS.

INTRODUCTION.

The term "preschool," while literally referring to the years of life prior to school attendance, necessarily applies to a period of variable length, inasmuch as school entrance ages in different sections of the country range from 5 to 8 years. Clinically, early childhood has long been divided into two periods, viz., infancy, the first two years of life, and the preschool age, from 2 to 6 or 7 years. In this study the term "preschool" covered the period 2 to 6 years inclusive.¹¹

A very considerable proportion, about 50 per cent, of all the children of preschool age in Gary were given physical examinations. The proportions of different ages who had physical examinations varied from approximately one-third of the children 3 years of age to about two-thirds of the 6-year-old children.

Nearly one-half (1,544) of the 3,125 children of this group given physical examinations were attending kindergarten or primary grades, and the examinations were made in their respective schools. The remaining 1,581 children were attendants at the health conferences.¹²

A singularly even distribution by sex is noticed in the entire group as well as at each age.

TABLE I.—*Age and sex; children from 2 to 7 years of age given physical examination.*

Age.	Both sexes.	Boys.	Girls.
All ages.....	3,125	1,555	1,570
2 years, under 3.....	511	261	250
3 years, under 4.....	496	251	245
4 years, under 5.....	549	274	275
5 years, under 6.....	667	337	330
6 years, under 7.....	682	334	348
7 years, under 8.....	220	98	122

To what extent the social and economic environment of these children affected their physical condition would be difficult to determine; but a consideration of the nationality and income of parents in relation to physical conditions offers interesting data.

¹¹ For explanation of inclusion see Note 1, page 12.

¹² See page 11.

Children of foreign-born white mothers constituted 60.7 per cent of the children in this study. The principal nationalities represented were Serbo-Croatian, Slovak, Polish, Magyar, Italian, German, and Lithuanian. (See General Table 10, p. 72.)

Family incomes were tabulated in groups ranging from those below \$650 to those of \$2,250 and over. Practically two-thirds of all the children of foreign-born white parentage belonged to the lower income groups, i. e., those under \$1,450. (See General Table 12, p. 73.)

FINDINGS IN GENERAL.

Table II gives an enumeration of the kinds of defects found and their distribution according to sex. The boys on the whole showed a slightly higher percentage having defects than the girls, 96.9 compared with 93.6. The large proportion of boys with genital defects (47.1 per cent) unquestionably accounts largely for this variation between the sexes, although dominance in defects of the nasopharynx, bony and muscular systems, and glands also helped to swell the higher percentage for boys.

TABLE II.—Prevalence of defects, by sex; children 2 to 7 years of age given physical examination.

Disease or defect.	Both sexes.		Boys.		Girls.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total	3,125	100.0	1,555	100.0	1,570	100.0
Without defects	149	4.8	48	3.1	101	6.4
With disease or defect	2,976	95.2	1,507	96.9	1,469	93.6
General:						
Underweight (10 per cent and over)	303	9.7	140	9.0	163	10.4
Anemia	243	7.8	113	7.3	130	8.3
Head	163	5.2	105	6.8	58	3.7
Abnormal shape	151	4.8	102	6.6	49	3.1
Open fontanelle	13	.4	5	.3	8	.5
Craniotabes	2	.1	1	.1	1	.1
Eyes	1,890	28.5	437	28.1	453	28.9
Vision defective	738	36.1	355	35.6	383	36.6
Diseases and defects other than of vision	245	7.8	127	8.2	118	7.5
Conjunctivitis	78	2.5	42	2.7	36	2.3
Blepharitis	70	2.2	38	2.4	32	2.0
Stye	28	.9	16	1.0	12	.8
Corneal ulcer	1	(¹)	1	.1		
Ptosis	13	.4	7	.5	6	.4
Corneal opacities	11	.4	7	.5	4	.3
Strabismus	76	2.4	33	2.1	43	2.7
Ears	4,295	9.4	171	11.0	124	7.9
Hearing defective	25	1.4	14	1.6	11	1.2
Acute otorrhea	3	.1	2	.1	1	.1
Chronic otorrhea	22	.7	15	1.0	7	.4
Retracted ear drums	258	8.3	148	9.5	110	7.0
Mouth	2,091	66.9	1,043	67.1	1,048	66.8
Decayed teeth	2,021	64.7	1,007	64.8	1,014	64.6
Malocclusion	343	11.0	183	10.5	180	11.5
Gum abscess	101	3.2	53	3.4	48	3.1

¹ In 1,061 cases, vision was not tested; hence this number does not include all possible cases of defective vision.

² Per cent based on 2,044 cases tested, 998 boys and 1,046 girls.

³ Less than one-tenth of 1 per cent.

⁴ In 1,279 cases, hearing was not tested; hence this number does not include all possible cases of defective hearing.

⁵ Per cent based on 1,846 cases tested, 901 boys and 945 girls.

⁶ A minimum statement—not all children were examined for this defect.

TABLE II.—Prevalence of defects, by sex; children 2 to 7 years of age given physical examination—Concluded.

Disease or defects.	Both sexes.		Boys.		Girls.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
With disease or defect—Continued.						
Naso-pharynx.....	2,157	69.0	1,118	71.9	1,039	66.2
Defective tonsils.....	1,626	52.0	836	53.8	790	50.3
Adenoids (definite).....	1,050	33.6	570	36.7	480	30.6
Adenoids suspected.....	207	6.6	106	6.8	101	6.4
Mouth breathing.....	1,232	39.4	670	43.1	562	35.8
Nasal discharge.....	299	9.6	157	10.1	142	9.0
High-arch palate.....	1,027	32.9	535	34.4	492	31.3
Nasal obstruction.....	1,194	38.2	651	41.9	543	34.6
Glands:						
Enlarged or greatly enlarged.....	908	29.1	489	31.4	419	26.7
Occipital glands.....	2	.1	1	.1	1	.1
Submaxillary glands.....	704	22.5	383	24.6	321	20.4
Cervical glands.....	241	7.7	143	9.2	98	6.2
Axillary glands.....	15	.5	12	.8	3	.2
Inguinal glands.....	51	1.6	38	2.4	13	.8
Thyroid glands.....	60	1.9	21	1.4	39	2.5
Heart.....	99	3.2	48	3.1	51	3.2
Heart disease.....	14	.4	9	.6	5	.3
Questionable heart disease.....	85	2.7	39	2.5	46	2.9
Lungs.....	32	1.0	21	1.4	11	.7
Lung disease.....	11	.4	6	.4	5	.3
Questionable lung disease.....	21	.7	15	1.0	6	.4
Skin.....	318	10.2	137	8.8	181	11.5
Eczema.....	80	2.6	49	3.2	31	2.0
Acne.....	1	(1)	1	.1	.....	.....
Pediculosis.....	145	4.6	35	2.3	110	7.0
Impetigo.....	8	.3	3	.2	5	.3
Infected sores.....	67	2.1	35	2.3	32	2.0
Ringworm.....	29	.9	18	1.2	11	.7
Scabies.....	9	.3	5	.3	4	.3
Scars.....	165	5.3	97	6.2	68	4.3
Abdomen.....	464	14.8	234	15.0	230	14.6
Distended abdomen.....	423	13.5	214	13.8	209	13.3
Enlarged liver.....	11	.4	5	.3	6	.4
Hernia.....	47	1.5	24	1.5	23	1.5
Bony and muscular system.....	1,308	41.9	709	45.6	599	38.2
Beaded ribs.....	31	1.0	15	1.0	16	1.0
Pigeon breast.....	53	1.7	38	2.4	15	1.0
Harrison's groove.....	175	5.6	112	7.2	63	4.0
Enlarged epiphyses.....	209	6.7	146	9.4	63	4.0
Round shoulders.....	103	3.3	62	4.0	41	2.6
Winged scapulae.....	452	14.5	238	15.3	214	13.6
Scoliosis.....	57	1.8	27	1.7	30	1.9
Lordosis.....	16	.5	10	.6	6	.4
Kyphosis.....	1	(1)	1	.1	.....	.....
Knock-knee.....	194	6.2	92	5.9	102	6.5
Bowlegs.....	300	9.6	193	12.4	107	6.8
Clubfeet.....	4	.1	3	.2	1	.1
Arthritis.....	3	.1	2	.1	1	.1
Paralysis.....	5	.2	4	.3	1	.1
Nervous system.....	75	2.4	42	2.7	33	2.1
Speech defect.....	54	1.7	28	1.8	26	1.7
Tic.....	8	.3	5	.3	3	.2
Chorea.....	1	(1)	1	.1	.....	.....
Other nervous disease.....	4	.1	3	.2	1	.1
Very nervous or restless.....	12	.4	7	.5	5	.3
Mentality.....	37	1.2	26	1.7	11	.7
Defect apparent.....	19	.6	12	.8	7	.4
Defect suspected.....	18	.6	14	.9	4	.3
Genitalia, male.....	.....	.....	732	47.1	.....	.....
Prepuce defects.....	.....	.....	719	46.2	.....	.....
Other defects.....	.....	.....	22	1.4	.....	.....
Genitalia, female.....	.....	.....	.....	.....	37	2.4
Vaginal discharge.....	.....	.....	.....	.....	.....	.....

¹ Less than one-tenth of 1 per cent.

The actual number of children without physical defects was found to be only 4.8 per cent of those examined—149 out of 3,125. The girls, of whom 6.4 per cent were without defect, made a more fa-

avorable showing than the boys, with only 3.1 per cent free from defect.

Boys also had the larger number of defects per individual, 44.8 per cent having 5 or more, as compared with 31.2 per cent of the girls. The average number of defects per child, based on all those who had defects, was 4.2 for both sexes, 4.5 for boys, and 3.8 for girls. This average for the different age groups was as follows: For the 2-year-olds, 2.7; for the 3-year-olds, 3.1; and for the 4-, 5-, and 6-year-olds, 3.5, 4.8, and 5, respectively. The proportion with no defects decreased from 15.1 per cent at 2 years to 0.3 per cent at 6 years.

TABLE III.—Number of defects, by age and sex; children 2 to 7 years of age given physical examination.

Number of defects, and sex.	Total children.		2 years, under 3.		3 years, under 4.		4 years, under 5.		5 years, under 6.		6 years, under 7.		7 years, under 8.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes.....	3,125	100.0	511	100.0	496	100.0	549	100.0	667	100.0	682	100.0	220	100.0
With defects.....	2,976	95.2	434	84.9	454	91.3	531	96.7	660	99.0	680	99.7	218	99.1
Less than 5.....	1,789	57.2	373	73.0	361	72.8	352	64.1	324	48.6	286	41.9	93	42.3
1.....	332	10.6	125	24.5	84	16.9	48	8.7	38	5.7	27	4.0	10	4.5
2.....	440	14.1	116	22.7	111	22.4	70	12.8	66	9.9	60	8.8	17	7.7
3.....	557	17.2	85	16.6	96	19.4	131	23.9	95	14.2	98	14.4	32	14.5
4.....	480	15.4	47	9.2	70	14.1	103	18.8	125	18.7	101	14.8	34	15.5
5 to 9.....	1,123	35.9	60	11.7	90	18.1	172	31.3	311	46.6	372	54.5	118	53.6
5.....	426	13.6	31	6.1	56	11.3	59	10.7	124	18.6	122	17.9	34	15.5
6.....	316	10.1	16	3.1	18	3.6	63	11.5	79	11.8	96	14.1	45	20.0
7.....	196	6.3	6	1.2	9	1.8	32	5.8	47	7.0	84	12.3	18	8.2
8.....	123	3.9	3	.6	4	.8	10	1.8	43	6.4	48	7.0	15	6.8
9.....	62	2.0	4	.8	3	.6	8	1.5	18	2.7	22	3.2	7	3.2
10 to 15.....	64	2.0	1	.2	2	.4	7	1.3	25	3.7	22	3.2	7	3.2
10.....	30	1.0	1	.2	.....	.....	1	.2	8	1.2	16	2.3	4	1.8
11.....	21	.7	.....	.....	2	.4	3	.5	13	1.9	1	.1	2	.9
12.....	8	.3	.....	.....	.....	.....	2	.4	3	.4	3	.4	.....	.....
13.....	3	.1	.....	.....	.....	.....	.....	.....	1	.1	2	.3	.....	.....
14.....	1	(1)	.....	.....	.....	.....	1	.2	.....	.....	.....	.....	.....	.....
15.....	1	(1)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Without defects.....	149	4.8	77	15.1	43	8.7	18	3.3	7	1.0	2	.3	2	.9
Boys.....	1,555	100.0	261	100.0	251	100.0	274	100.0	337	100.0	334	100.0	98	100.0
With defects.....	1,507	96.9	235	90.0	237	94.4	269	98.2	335	99.4	333	99.7	98	100.0
Less than 5.....	810	52.1	194	74.3	174	69.3	150	56.9	133	39.5	117	35.0	36	36.7
1.....	136	8.7	57	21.8	32	12.7	17	6.2	15	4.5	9	2.7	6	6.1
2.....	181	11.6	57	21.8	59	23.5	26	9.5	18	5.3	18	5.4	3	3.1
3.....	242	15.6	45	17.2	44	17.5	61	22.3	39	11.6	40	12.0	13	13.3
4.....	251	16.1	35	13.4	39	15.5	52	19.0	61	18.1	50	15.0	14	14.3
5 to 9.....	652	41.9	41	15.7	61	24.3	108	39.4	184	54.6	202	60.5	56	57.1
5.....	233	15.0	19	7.3	34	13.5	36	13.1	65	19.3	63	18.9	16	16.3
6.....	184	11.8	12	4.6	16	6.4	36	13.1	49	14.5	47	14.1	24	24.5
7.....	121	7.8	4	1.5	4	1.6	24	8.8	31	9.2	50	15.0	8	8.2
8.....	74	4.8	2	.8	4	1.6	8	2.9	26	7.7	28	8.4	6	6.1
9.....	40	2.6	4	1.5	3	1.2	4	1.5	13	3.9	14	4.2	2	2.0
10 to 15.....	45	2.9	.....	.....	2	.8	5	1.8	18	5.3	14	4.2	6	6.1
10.....	21	1.4	.....	.....	.....	.....	1	.4	5	1.5	11	3.3	4	4.1
11.....	15	1.0	.....	.....	2	.8	2	.7	10	3.0	.....	.....	1	1.0
12.....	5	.3	.....	.....	.....	.....	1	.4	2	.6	2	.6	.....	.....
13.....	2	.1	.....	.....	.....	.....	.....	.....	1	.3	1	.3	.....	.....
14.....	1	.1	.....	.....	.....	.....	1	.4	.....	.....	.....	.....	.....	.....
15.....	1	.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Without defects.....	48	3.1	26	10.0	14	5.6	5	1.8	2	.6	1	.3	1	1.0
Girls.....	1,570	100.0	250	100.0	245	100.0	275	100.0	330	100.0	348	100.0	122	100.0

¹ Less than one-tenth of 1 per cent.

TABLE III.—Number of defects, by age and sex; children 2 to 7 years of age given physical examination—Concluded.

Number of defects, and sex.	Total children.		2 years, under 3.		3 years, under 4.		4 years, under 5.		5 years, under 6.		6 years, under 7.		7 years, under 8.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
With defects...	1,469	93.6	199	79.6	216	88.2	262	95.3	325	98.5	347	99.7	120	98.4
Less than 5.	979	62.4	179	71.6	187	76.3	196	71.3	191	57.9	169	48.6	57	46.7
1.....	196	12.5	68	27.2	52	21.2	31	11.3	23	7.0	18	5.2	4	3.3
2.....	259	16.5	59	23.6	52	21.2	44	16.0	48	14.5	42	12.1	14	11.5
3.....	295	18.8	40	16.0	52	21.2	70	25.5	56	17.0	58	16.7	19	15.6
4.....	229	14.6	12	4.8	31	12.7	51	18.5	64	19.4	51	14.7	20	16.4
5 to 9.....	471	30.0	19	7.6	29	11.8	64	23.3	127	38.5	170	48.8	62	50.8
5.....	193	12.3	12	4.8	22	9.0	23	8.4	59	17.9	59	17.0	18	14.8
6.....	132	8.4	4	1.6	2	.8	27	9.8	30	9.1	49	14.1	20	16.4
7.....	75	4.8	2	.8	5	2.0	8	2.9	16	4.8	34	9.8	10	8.2
8.....	49	3.1	1	.4			2	.7	17	5.2	20	5.7	9	7.4
9.....	22	1.4					4	1.5	5	1.5	8	2.3	5	4.1
10 to 15.....	19	1.2	1	.4			2	.7	7	2.1	8	2.3	1	.8
10.....	9	.6	1	.4					3	.9	5	1.4		
11.....	6	.4							3	.9	1	.3	1	.8
12.....	3	.2					1	.4	1	.3	1	.3		
13.....	1	.1									1	.3		
Without defects	101	6.4	51	20.4	29	11.8	13	4.7	5	1.5	1	.3	2	1.6

Correlations with nationality showed that children of foreign-born white parentage had slightly more defects than those of native white parentage.

The proportion without defect was higher among children of native white mothers than among those of the other nationality groups—6.8 per cent as compared with only 3.6 per cent among the children of foreign-born white mothers and 2.8 per cent among the colored children. Among the foreign nationalities represented in the study the Polish had the largest proportion without defects, 5.4 per cent, the Magyar came next with 4, then the Slovak with 3.5 per cent, the Italian with 3.2 per cent, the German with 2.9 per cent, the Lithuanian with 2.4 per cent, and the Serbo-Croatian with only 1.6 per cent free from defects. The average number of defects per individual child among the children who had one or more defects varied in a similar manner; it was lowest, 3.8, for the children of native white mothers, next for the children of foreign-born white mothers, averaging 4.3, and highest, 4.6, for the colored children. Among the foreign nationalities, the Polish had the best record, with only 3.8 defects to a child; the German were next, with 4.1; the Italian followed, with 4.3; the Slovak and Lithuanian, each with 4.4, the Serbo-Croatian, with 4.5; and the Magyar, with 4.6.

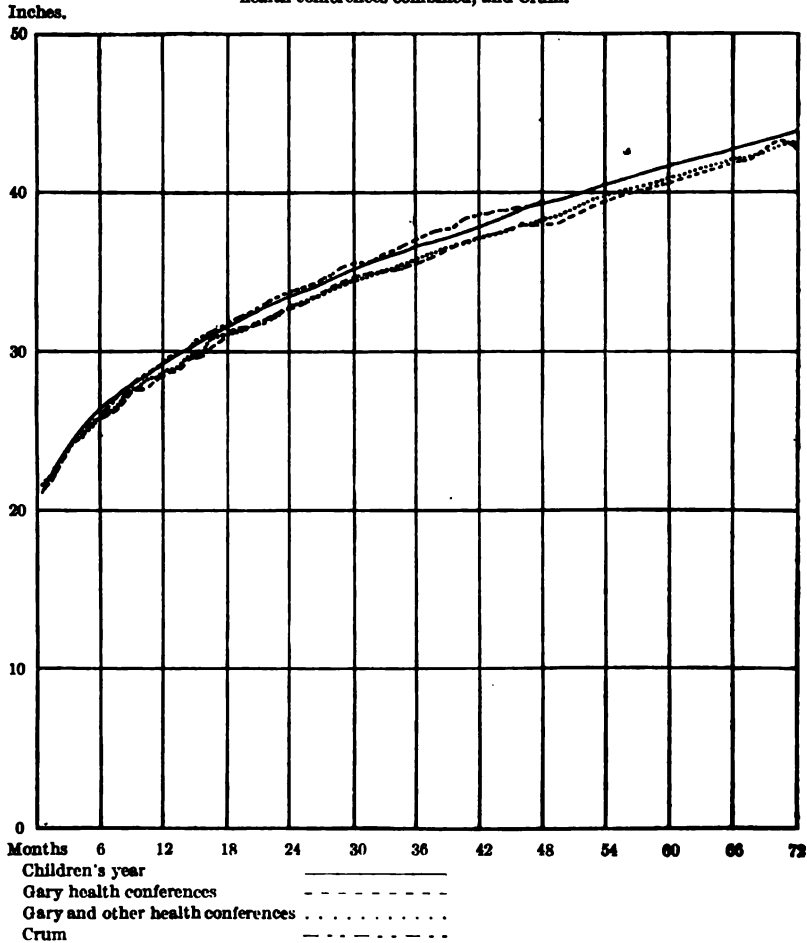
The proportion of children without defects varied also according to fathers' earnings. Thus in families where the fathers earned \$2,250 and over the percentage of children without defects was 6.6, as compared with a percentage of only 3.9 in families where the fathers earned less than \$1,050.

A discussion of the findings in detail follows, the items covered by the examination appearing in the same order as on the record form.

HEIGHT AND WEIGHT.

The average heights and weights of Gary boys and girls 7 years of age and under, according to age, are recorded in Table IV. As has

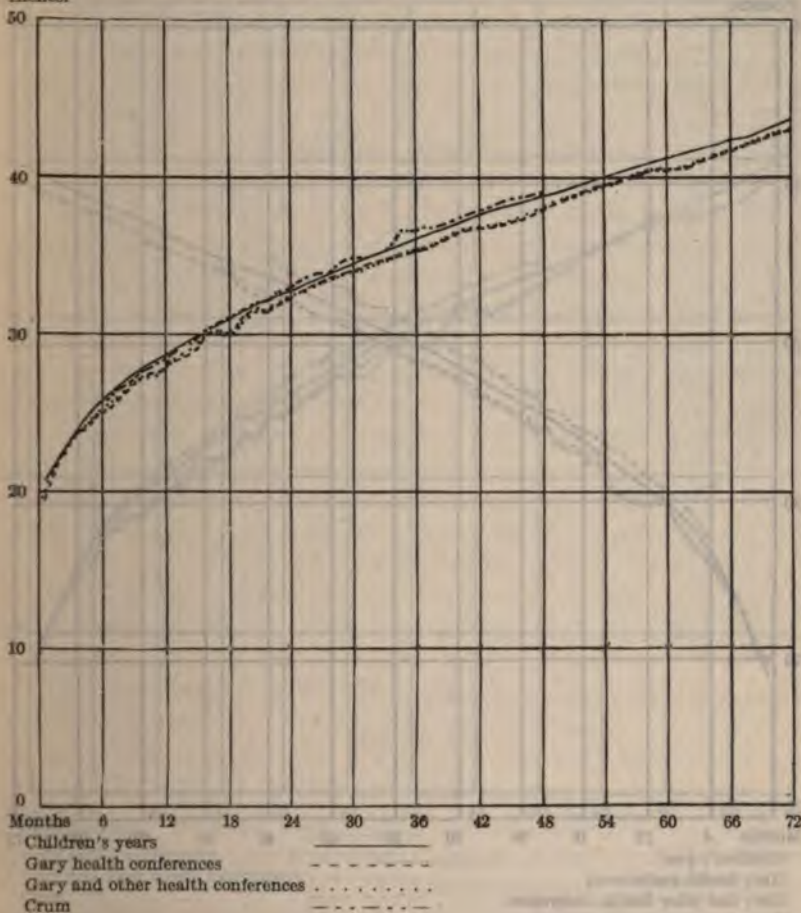
CHART I. Average heights of boys from birth to 6 years of age; Children's year, Gary, Gary and health conferences combined, and Crum.



already been stated, these figures represent the results of stripped examinations, in which measurements were made uniformly and were carefully verified. These figures are lower throughout than Crum's and Bowditch's, which were used as standards at the examinations, and also lower than the averages obtained from the figures submitted by doctors and nurses in all parts of the country during the Children's Year campaign.

In explanation of these differences it may be noted that Doctor Crum's figures were based upon children weighed and measured at baby health conferences and baby contests, in many of which prizes were given for the most perfect physical development. The children brought to these conferences and contests undoubtedly included many who were taller and heavier than the average. The Children's Year figures were based on a sample of slightly over 1 per cent of the

CHART II. Average height of girls from birth to 6 years of age; Children's year, Gary, Gary and health conferences combined, and Crum.
Inches.

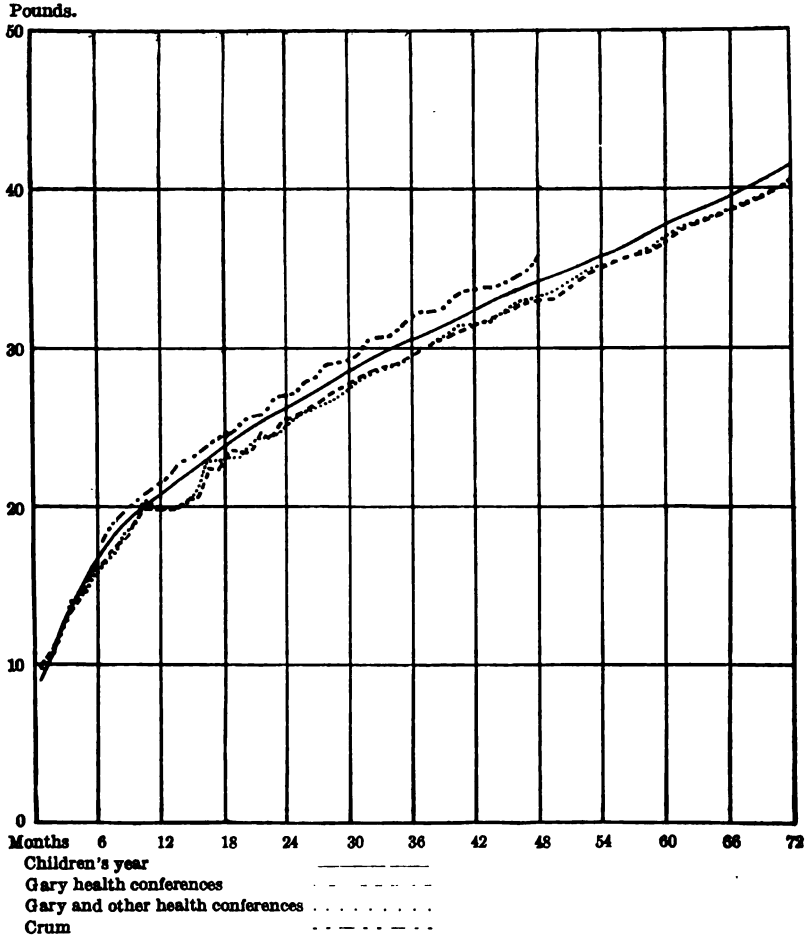


total number of children under 6 years of age in the country, who were weighed and measured in the course of the Children's Year weighing and measuring campaign. Though the campaign was designed to reach all classes of the population, the sample included in the tabulation may have been slightly biased, since the California children, who were found to be somewhat taller and heavier than

children in other parts of the country, were more largely represented in the group tabulated than in the total population under 6 years of age.

The Gary heights and weights, however, as already stated, were based upon a very large proportion of the children in the city under 6 years of age, and there was therefore less chance for these averages to be influenced by any biased selections.

CHART III. Average weights of boys from birth to 6 years of age; Children's year, Gary, Gary and health conferences combined, and Crum.

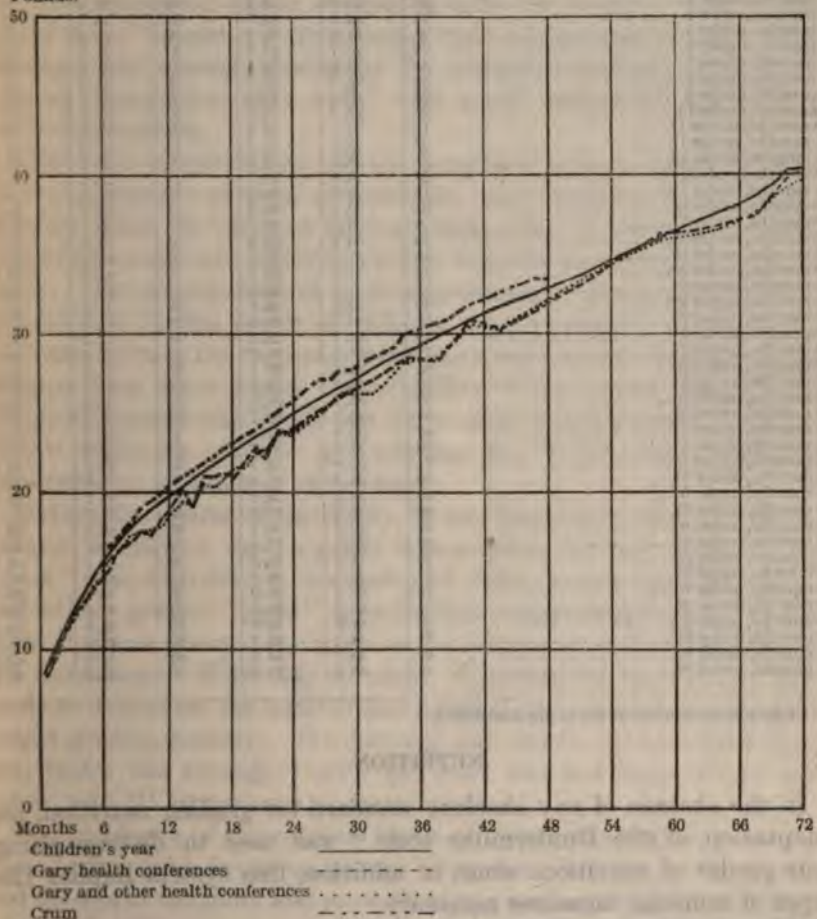


On the other hand, the Gary averages are for children in a group in which the nationality composition varies considerably from that in the country as a whole. About three-fifths of the children under 7 years of age in Gary had foreign-born mothers, as compared with only about one-fourth in the country as a whole. The principal foreign nationalities represented were the Slavic groups—including

Polish, Serbo-Croatian, and Slovak—and the Magyar, the Italian, and the German. Of these, the Italians are of markedly shorter stature than the British stocks which form the principal element in the native white population, and the Poles and Serbs are somewhat shorter, while the Germans are of very nearly the same stature as the British stocks.¹³ The special nationality composition of the

CHART IV. Average weights of girls from birth to 6 years of age; Children's year, Gary, Gary and health conferences combined, and Crum.

Pounds.



Gary group of children may therefore account for the low average heights, and, since at these ages weight depends very largely upon height, it may account for the low average weights also.

¹³ For statistics as to the average statures of adult males of these races, see *The Medical Department of the United States Army in the World War, Vol. XV, Statistics, Part I, Army Anthropology*, by Charles E. Davenport and Albert G. Love, pp. 47, 113. Washington, 1921.

TABLE IV.—Average heights and weights, by sex and age; white children 7 years of age and under given physical examination.¹

Age.	Boys.			Girls.		
	Number.	Average height (inches).	Average weight (pounds).	Number.	Average height (inches).	Average weight (pounds).
Under 1 month.....	3	21.3	10.0	5	19.4	8.3
1 month, under 2.....	10	21.9	10.8	18	21.3	9.5
2 months, under 3.....	22	23.3	12.3	16	22.8	11.3
3 months, under 4.....	22	24.3	13.5	25	23.7	12.6
4 months, under 5.....	25	24.8	14.3	20	23.9	13.3
5 months, under 6.....	29	25.7	15.9	17	24.8	14.1
6 months, under 7.....	31	25.9	16.3	19	25.0	14.8
7 months, under 8.....	30	26.4	17.3	29	25.9	16.2
8 months, under 9.....	20	27.0	17.8	13	26.3	16.7
9 months, under 10.....	22	27.7	19.0	23	27.1	17.4
10 months, under 11.....	15	27.7	19.9	28	27.4	17.1
11 months, under 12.....	28	28.4	19.8	18	27.3	18.2
12 months, under 13.....	31	28.7	19.8	24	28.3	18.8
13 months, under 14.....	24	28.8	19.7	14	28.4	20.3
14 months, under 15.....	15	29.7	20.4	17	28.8	18.8
15 months, under 16.....	24	29.5	20.5	15	29.7	20.9
16 months, under 17.....	9	30.3	22.3	18	30.3	20.9
17 months, under 18.....	19	30.8	22.2	25	30.0	21.1
18 months, under 19.....	16	31.5	23.6	22	30.2	20.9
19 months, under 20.....	15	31.5	23.5	13	31.2	22.0
20 months, under 21.....	19	31.5	23.4	18	31.6	22.8
21 months, under 22.....	40	32.0	24.6	23	31.3	22.1
22 months, under 23.....	24	32.3	24.2	25	31.8	23.7
23 months, under 24.....	19	32.7	25.3	16	32.2	23.7
24 months, under 27.....	79	33.1	25.7	55	32.9	24.6
27 months, under 30.....	64	34.3	27.1	65	33.6	25.9
30 months, under 33.....	62	34.8	28.3	56	34.4	26.8
33 months, under 36.....	52	35.2	28.9	65	35.0	28.4
36 months, under 39.....	68	36.2	30.1	51	35.4	28.2
39 months, under 42.....	42	36.9	31.1	40	36.7	30.7
42 months, under 45.....	59	37.3	31.7	64	36.9	30.2
45 months, under 48.....	74	38.0	32.7	85	37.5	31.2
48 months, under 51.....	69	38.2	33.0	79	38.4	32.4
51 months, under 54.....	64	39.2	34.5	69	39.1	33.5
54 months, under 57.....	69	39.7	35.5	53	39.7	35.1
57 months, under 60.....	62	40.3	36.1	66	40.5	36.2
60 months, under 63.....	80	41.1	37.5	76	40.6	36.4
63 months, under 66.....	86	41.5	38.2	84	41.3	36.9
66 months, under 69.....	83	42.1	39.0	80	42.0	37.5
69 months, under 70.....	79	43.3	40.0	83	42.9	39.8
72 months, under 75.....	90	42.1	40.9	81	43.1	40.4
75 months, under 78.....	90	44.0	42.6	82	43.3	39.9
78 months, under 81.....	74	44.1	42.9	83	44.0	41.8
81 months, under 84.....	69	45.1	44.2	87	44.4	42.3
84 months, under 87.....	65	45.1	45.0	93	45.2	45.2

¹ Twenty-five excluded owing to physical defects.

NUTRITION.

In the absence of any absolute standard for grading nutrition, an adaptation of the Dunfermline scale¹⁴ was used in distinguishing four grades of nutrition, since, in addition, this system implies the types of remedial measures necessary.

While the Dunfermline system takes into consideration the general appearance of the child, including the condition of the skin, subcutaneous fat, muscle turgor, anemia, posture, vigor, etc., conditions all necessarily contributory to a complete picture of nutrition, any test based upon individual observation and judgment would produce

¹⁴ The four groups are distinguished by the Dunfermline scale as follows: 1. "Excellent" means the nutrition of a healthy child "of good social standing." 2. Children whose nutrition falls just short of this standard are "good." 3. Children "requiring supervision" are on the border line of serious impairment. 4. Children "requiring medical treatment" are those whose nutrition is seriously impaired.

as great a variation in results as there were examiners. In this study, therefore, "grade of nutrition," as recorded for statistical purposes, was based upon deviations from the average weight-height ratios, irrespective of age. "Excellent" included all children above average weight for height whose general condition in the opinion of the examiners was better than "good." "Good" indicated that the weight was not under the arbitrary standard now in common usage, i. e., 10 per cent deviation below average weight for height. "Poor" and "very poor" meant a weight-height ratio 10 per cent or more below average, and distinguishable by the attention required, "poor" requiring supervision only and "very poor" indicating the need of medical attention.

While the weight-height ratio is recognized as but a single criterion in the composite picture of nutrition, and therefore in no sense a definite guide, its value as even a rough index of the general condition of nutrition was tested in various ways by the tabulations in this study. The distribution of undernourishment, thus graded, was decidedly less in this group of children than ordinarily reported—9.7 per cent. Since the care and uniformity with which the heights and weights were taken insure the reliability of the figures, the question is logically raised whether or not the average weights used as standard in this study are correct—and whether the 10 per cent deviation is applicable to children of these ages.

During the course of the study, it was frequently observed by the medical examiners that a grade intermediate between "good" and "poor" was desirable, as a number of children were graded "poor" and others graded "good" because the weight-height index placed them in these groups, contrary to the judgment and observation of the examiners. With this in mind, experimental tabulations were made to determine the number and kinds of defects in various weight-height groups, namely: (1) Average and above, (2) less than 7 per cent below the average,¹⁵ (3) 7 per cent, but less than 10 per cent below, and (4) 10 per cent or more below.

The incidence of the various kinds of defects as they appeared in these four weight-deviation groups¹⁶ suggests that except for anemia and defects of the bony and muscular systems there may be no definite relation between number and kinds of defects and degree of underweight.

These results also make apparent the need for further study of the growth of children between 2 and 7 years of age before any approximate standard of deviation from the average weight can be made for children at this age period. The large proportion of defects among

¹⁵ Seven per cent deviation is apparently as arbitrary a standard as 10 per cent, but was the figure suggested by nutrition workers at the time this study was in progress as being a more significant deviation than the commonly used 10 per cent.

¹⁶ See General Table 5, p. 68.

children of average weight or above suggests the importance of periodic physical examination.

Based on the weight-height ratio alone, Table V indicates that at least an average condition of nutrition (good and excellent) was found in 90.3 per cent of the group, although only 18.6 per cent were considered "excellent."

Boys varied from the average less than girls; of the latter 20.4 per cent were found in the "excellent" grade and 10.4 per cent in the malnourished group (poor and very poor combined) in contrast with the comparative percentages of 16.7 and 9, among the boys.

TABLE V.—Grade of nutrition, by age and sex; children 2 to 7 years of age given physical examination.

Age and sex.	Total children.	Grade of nutrition.							
		Excellent.		Good.		Poor.		Very poor.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Both sexes	3,125	580	18.6	2,242	71.7	281	9.0	22	0.7
2 years, under 3.....	511	71	13.9	355	69.5	81	15.9	4	.8
3 years, under 4.....	496	88	17.7	349	70.4	57	11.5	2	.4
4 years, under 5.....	549	100	18.2	393	71.6	54	9.8	2	.4
5 years, under 6.....	667	126	18.9	497	74.5	41	6.1	3	.4
6 years, under 7.....	682	142	20.8	492	72.1	40	5.9	8	1.2
7 years, under 8.....	220	53	24.1	156	70.9	8	3.6	3	1.4
Boys	1,555	259	16.7	1,156	74.3	130	8.4	10	.6
2 years, under 3.....	261	35	13.4	183	70.1	40	15.3	3	1.1
3 years, under 4.....	251	42	16.7	180	71.7	28	11.2	1	.4
4 years, under 5.....	274	42	15.3	204	74.5	27	9.9	1	.4
5 years, under 6.....	337	57	16.9	264	78.3	16	4.7	.....	.....
6 years, under 7.....	334	62	18.6	252	75.4	17	5.1	3	.9
7 years, under 8.....	98	21	21.4	73	74.5	2	2.0	2	2.0
Girls	1,570	321	20.4	1,066	69.2	151	9.6	12	.8
2 years, under 3.....	250	36	14.4	172	68.8	41	16.4	1	.4
3 years, under 4.....	245	46	18.8	169	69.0	29	11.8	1	.4
4 years, under 5.....	275	58	21.1	199	68.7	27	9.8	1	.4
5 years, under 6.....	330	69	20.9	233	70.6	25	7.6	3	.9
6 years, under 7.....	348	80	23.0	240	69.0	23	6.6	5	1.4
7 years, under 8.....	122	32	26.2	83	68.0	6	4.9	1	.8

Classified according to nationality, the well nourished showed an equal distribution among children of native and of foreign-born white parentage, although the former group had a slightly higher per cent of "excellently" nourished—20.9 as against 17. The highest per cent of "excellently nourished" in any nationality appeared in the Lithuanians (28.9), and the highest per cent of poorly nourished appeared in the Germans (15.1). Colored children showed an average condition regarding nutrition.

The higher income groups contained 20.5 per cent excellently nourished children and 9.4 per cent poorly nourished. The lower income groups contained 16.7 per cent excellently nourished and 10 per cent poorly nourished—indicating that higher family incomes do not necessarily imply more intelligent feeding and care.

TABLE VI.—Grade of nutrition, by color and nationality of mother; children 2 to 7 years of age given physical examination.

Color and nationality of mother.	Total children.	Grade of nutrition.							
		Excellent.		Good.		Poor.		Very poor.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	3,125	580	18.6	2,242	71.7	281	9.0	22	0.7
White.....	3,047	563	18.5	2,188	71.8	274	9.0	22	.7
Native.....	1,151	240	20.9	797	69.2	106	9.2	8	.7
Foreign-born.....	1,896	323	17.0	1,391	73.4	168	8.9	14	.7
Serbo-Croatian.....	321	58	18.1	235	73.2	26	8.1	2	.6
Slovak.....	313	36	11.5	243	77.6	29	9.3	5	1.6
Polish.....	224	29	12.9	172	76.8	21	9.4	2	.9
Magyar.....	176	34	19.3	131	74.4	11	6.3	.....	.....
Italian.....	157	33	21.0	115	73.2	9	5.7	.....	.....
German.....	139	27	19.4	91	65.5	20	14.4	1	.7
Lithuanian.....	83	24	28.9	53	63.0	6	7.2	.....	.....
All other.....	483	82	17.0	351	72.7	46	9.5	4	.8
Negro.....	71	15	21.1	49	69.0	7	9.9	.....	.....
Not reported.....	7	2	.....	5	.....	.....	.....	.....	.....

¹ Not shown where base is less than 50.

TABLE VII.—Grade of nutrition, by earnings of chief breadwinner; children 2 to 7 years of age given physical examination.

Earnings of chief breadwinner.	Total children.	Grade of nutrition.							
		Excellent.		Good.		Poor.		Very poor.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	3,125	580	18.6	2,242	71.7	281	9.0	22	0.7
Under \$650.....	110	11	10.0	80	80.9	9	8.2	1	.9
\$650-\$849.....	240	36	15.0	179	74.6	20	8.3	5	2.1
\$850-\$1,049.....	412	56	13.6	317	76.9	34	8.3	5	1.2
\$1,050-\$1,249.....	491	94	19.1	342	69.7	53	10.8	2	.4
\$1,250-\$1,449.....	456	88	19.3	326	71.5	39	8.6	3	.7
\$1,450-\$1,849.....	613	121	19.7	430	70.1	60	9.8	2	.3
\$1,850-\$2,249.....	262	53	20.2	183	69.8	24	9.2	2	.8
\$2,250 and over.....	303	68	22.4	212	70.0	22	7.3	1	.3
No chief breadwinner and no earnings.....	58	11	19.0	42	72.4	5	8.6	.....	.....
Not reported.....	180	42	23.3	122	67.8	15	8.3	1	.6

ANEMIA.

Obviously, mere inspection of the mucous membranes for pallor furnishes no accurate guide as to the degree of anemia; but in this type of study blood examinations are not feasible. However, the results here recorded coincide somewhat closely with those of more accurate clinical methods.

Nearly 8 per cent of the group were considered anemic. There was very slight difference in this respect between boys and girls, but pallor was more common in the older children. In both sexes a very notable increase in the percentage of pale children appeared after

the fifth year, and a marked increase during the seventh year, when 16.7 per cent showed unusual pallor.

The percentage of anemic children was slightly higher among the children of foreign-born parentage (8.6) than among those of native white parentage (6.2). The colored children showed the highest percentage (11.3).

Children in the families of income groups below \$1,450 showed a slightly higher percentage of anemia (8.4) than children in the families of the groups where earnings were \$1,450 and over (6.5).

While pallor is generally considered a fairly constant sign in malnutrition, in this study only 13.9 per cent of the most seriously underweight children were considered anemic.

VACCINATION.

Unless the mother was with the child, no history as to age or success of smallpox vaccination was obtainable, and the presence of a scar was the evidence on which vaccination was checked.

TABLE VIII.—*Vaccination, by age and sex; children 2 to 7 years of age given physical examination.*

Age and sex.	Total children.	Vaccinated.		Not vaccinated.		Not reported whether vaccinated.
		Number.	Per cent.	Number.	Per cent.	
Both sexes.....	3,125	762	24.4	2,358	75.5	5
2 years, under 3.....	511	44	8.6	467	91.4	.....
3 years, under 4.....	496	75	15.1	421	84.9	.....
4 years, under 5.....	549	111	20.2	438	79.4	2
5 years, under 6.....	667	195	29.2	470	70.5	2
6 years, under 7.....	682	253	37.1	428	62.8	1
7 years, under 8.....	220	84	38.2	136	61.8	.....
Boys.....	1,555	368	23.7	1,184	76.1	3
2 years, under 3.....	261	23	8.8	238	91.2	.....
3 years, under 4.....	251	34	13.5	217	86.5	.....
4 years, under 5.....	274	49	17.5	225	82.1	1
5 years, under 6.....	337	101	30.0	234	69.4	2
6 years, under 7.....	334	126	37.7	208	62.3	.....
7 years, under 8.....	98	36	36.7	62	63.3	.....
Girls.....	1,570	394	25.1	1,174	74.8	2
2 years, under 3.....	250	21	8.4	229	91.6	.....
3 years, under 4.....	245	41	16.7	204	83.3	.....
4 years, under 5.....	275	63	22.9	211	76.7	1
5 years, under 6.....	330	94	28.5	236	71.5	.....
6 years, under 7.....	348	127	36.5	220	63.2	1
7 years, under 8.....	122	48	39.3	74	60.7	.....

Of all the children examined, only 24.4 per cent had been vaccinated. Early vaccination, i. e., by 1 year of age, appears not to have been the rule, for only 8.6 per cent of the children between 2 and 3 years of age had been vaccinated. The percentage increased with each year of age, however, and reached 37.1 by the seventh year, indicating that the school-entrance requirement was the principal

factor influencing vaccination. About one-sixth (14.6 per cent) of the 1,581 children who had not entered school had been vaccinated, while of the 1,544 attending school more than one-third (34.4 per cent) had been vaccinated.

TABLE IX.—*Vaccination, time of vaccination, and entrance in school, by color and nationality of mother; children 2 to 7 years of age given physical examination.*

Vaccination, time of vaccination, and entrance in school.	Total children.		Children of—						
			Native white mothers.		Foreign-born white mothers.		Negro mothers.		Mothers whose nationality was not reported.
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	3,125	100.0	1,151	100.0	1,896	100.0	71	100.0		7
Not yet in school.....	1,581	50.6	596	51.8	949	50.1	32	45.1	4
Vaccinated.....	231	7.4	56	4.9	175	9.2	.....	.....	.....
Not vaccinated.....	1,348	43.1	540	46.9	772	40.7	32	45.1	4
Not reported.....	2	.1	.....	.....	2	.1	.....	.....	.....
In school.....	1,544	49.4	555	48.2	947	49.9	39	54.9	3
Vaccinated.....	531	17.0	149	12.9	374	19.7	7	9.9	1
Before entering school.....	142	4.5	40	3.5	99	5.2	2	2.8	1
After entering school.....	71	2.3	36	3.1	33	1.7	2	2.8	.....
Not vaccinated.....	318	10.2	73	6.3	242	12.8	3	4.2	.....
Not reported.....	1,010	32.3	406	35.3	570	30.1	32	45.1	2
Vaccination not reported.....	3	.1	.....	.....	3	.2	.....	.....	.....

A comparison by nationality shows that 28.9 per cent of the children of foreign-born white mothers and 17.8 per cent of those of native white mothers had been vaccinated.

It was impossible to get entirely accurate figures as to how many of the school children were vaccinated before and after entering school, on account of the large number of cases in which no report on this subject was made. However, an analysis of the few cases where an answer to this question was obtained revealed the fact that among 132 children of foreign-born white parentage, three times as many were vaccinated before entering school as after entering, 99 as compared with 33; while among 76 children of native white parentage, almost as many were vaccinated after entering school as before entering, 36 as compared with 40.

The fact that in the mother countries people are accustomed to compulsory vaccination probably accounts for the greater frequency and earlier ages of vaccination among the children of foreign-born parentage.

HEAD.

While anthropometric head measurements were not made in this study, observations were recorded as to apparent abnormalities in size in 76 cases. More than twice as many boys as girls had abnormally shaped heads, the square or rachitic head being the most preva-

lent type. Open fontanelles ranging in diameter from 1 centimeter to 2½ centimeters persisted in 13 children in this group, of whom one was past 3 years of age.

EYES.

It was possible to test vision in only about two-thirds (2,044 cases) of the children who were given physical examinations, since only the exceptional child under 3 years of age comprehended the test at all and only a very small number (124) of children under 4 years did so.

Out of the 2,044 children given vision tests, slightly more than one-third (36.1 per cent) showed defective sight of varying degree, with apparently no significant relation to age, although the fifth year showed a slightly higher per cent than any of the others (39).

TABLE X.—Defect of vision, by age; children 2 to 7 years of age given physical examination.

Defect of vision.	Total children.		2 years, under 3. ¹		3 years, under 4.		4 years, under 5.		5 years, under 6.		6 years, under 7.		7 years, under 8.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	3,125	.....	511	.....	496	.....	549	.....	667	.....	682	.....	220	.....
Vision tested.....	2,044	100.0	4	.....	124	100.0	403	100.0	631	100.0	663	100.0	219	100.0
Vision normal.....	1,306	63.9	3	.....	85	68.5	248	61.5	385	61.0	414	62.4	171	78.1
Vision defective.....	738	36.1	1	.....	39	31.5	155	38.5	246	39.0	249	37.6	48	21.9
Both slightly defective.....	461	22.6	1	.....	29	23.4	101	25.1	163	25.8	142	21.4	25	11.4
Both seriously defective.....	108	5.3	.....	.....	3	2.4	18	4.5	32	5.1	44	6.6	11	5.0
One normal, one slightly defective.....	76	3.7	.....	.....	3	2.4	20	5.0	22	3.5	27	4.1	4	1.8
One normal, one seriously defective.....	29	1.4	.....	.....	.....	.....	4	1.0	6	1.0	16	2.4	3	1.4
One slightly defective, other seriously defective.....	61	3.0	.....	.....	3	2.4	12	3.0	22	3.5	19	2.9	5	2.3
Blind in one or both eyes.....	3	.1	.....	.....	1	.8	.....	.....	1	.2	1	.2	.....	.....
Vision not tested.....	1,081	.....	507	.....	372	.....	146	.....	36	.....	19	.....	1	.....

¹ Per cent distribution not shown where base is less than 50.

The degree of visual abnormality varied from slight defect of one eye to serious defect of one or both, and even blindness.

In 108 cases vision was seriously defective in both eyes and the need for glasses imperative, as shown by the test and corroborated by the specialist. Of these children, only 10 per cent were wearing glasses; the other 90 per cent were not even cognizant of the need for them.

Strabismus was found in 2.4 per cent of all the children, but corrective glasses for this defect were being worn by only about one-seventh of the children with this defect. While fewer boys (33) than girls (43) had strabismus, it is worthy of comment that of the 11 children having strabismus and wearing glasses only 1 was a boy.

Eye diseases and defects other than those of vision were found in 7.8 per cent of all the children; but twice as large a proportion of those with poor vision (12.6 per cent) as of those with normal vision (6.4 per cent) had other eye defects or diseases.

TABLE XI.—*Vision, by sex and eye disease or other defect; children 2 to 7 years of age given physical examination.*

Vision and sex.	Total children.	With eye disease or defect other than vision.		Without eye disease.
		Number.	Per cent.	
Both sexes.....	3,125	245	7.8	2,880
Vision tested.....	2,044	177	8.7	1,867
Normal.....	1,306	84	6.4	1,222
Defective.....	738	93	12.6	645
Vision not tested.....	1,081	68	6.3	1,013
Boys.....	1,555	127	8.2	1,428
Vision tested.....	998	91	9.1	907
Normal.....	643	46	7.2	597
Defective.....	355	45	12.7	310
Vision not tested.....	557	36	6.5	521
Girls.....	1,570	118	7.5	1,452
Vision tested.....	1,046	86	8.2	960
Normal.....	663	38	5.7	625
Defective.....	383	48	12.5	335
Vision not tested.....	524	32	6.1	492

On the whole, slight difference was found between the eye conditions of the children of native and of foreign-born white parentage. Among the latter, the highest percentage with defective vision was found among the children of Italian parentage. The colored children, although few in number, were freer from eye defects than any other group of children, only 1 out of 71 (1.4 per cent) having eye defect.

TABLE XII.—*Eye disease or defect other than of vision, by color and nationality of mother; children 2 to 7 years of age given physical examination.*

Color and nationality of mother.	Total children.	With eye disease or defect other than of vision.		Without eye disease.
		Number.	Per cent.	
Total.....	3,125	245	7.8	2,880
White.....	3,047	244	8.0	2,803
Native.....	1,151	86	7.5	1,065
Foreign-born.....	1,896	158	8.3	1,738
Serbo-Croatian.....	321	27	8.4	294
Slovak.....	313	32	10.2	281
Polish.....	224	13	5.8	211
Magyar.....	176	17	9.7	159
Italian.....	157	19	12.1	138
German.....	139	11	7.9	128
Lithuanian.....	83	4	4.8	79
All other.....	483	35	7.2	448
Negro.....	71	1	1.4	70
Not reported.....	7			7

EARS.

It was not possible to test successfully as many children for hearing as for vision, as sufficiently quiet quarters could not always be obtained. The total number examined was about 200 less than the number tested for vision. The total number of cases of defective hearing, including slight and serious defect of one or both ears, was only 25, or 1.4 per cent of those examined.

Aside from defective hearing, the other ear defects noted were 25 cases of otorrhea and 258 cases of retracted ear drums.

MOUTH.

Teeth.

The most conspicuous single defect in the entire preschool group was carious teeth. This condition was found in 64.7 per cent of the children examined, the percentages increasing from 21.1 in the 2- to 3-year-old children to 87.7 in the 6- to 7-year-olds. In the entire group, 83 children had decayed permanent teeth.

TABLE XIII.—Decayed teeth, by age and sex; children 2 to 7 years of age given physical examination.

Age and sex	Total children.	Without decayed teeth.		With decayed teeth.							
				Total.		Temporary only.		Temporary and permanent.		Permanent only.	
		Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Both sexes.....	3,125	1,104	35.3	2,021	64.7	1,038	51.2	80	2.6	3	0.1
2 years, under 3.....	511	403	78.9	108	21.1	108	21.1				
3 years, under 4.....	496	278	55.0	218	44.0	218	44.0				
4 years, under 5.....	549	185	33.7	364	66.3	363	66.1	1	.2		
5 years, under 6.....	667	134	20.1	533	79.9	520	78.0	13	1.9		
6 years, under 7.....	682	84	12.3	598	87.7	555	81.4	41	6.0	2	.3
7 years, under 8.....	220	20	9.1	200	90.9	174	79.1	25	11.4	1	.5
Boys.....	1,555	548	35.2	1,007	64.8	976	62.8	31	2.0		
2 years, under 3.....	261	204	78.2	57	21.8	57	21.8				
3 years, under 4.....	251	136	54.2	115	45.8	115	45.8				
4 years, under 5.....	274	92	33.6	182	66.4	181	66.1	1	.4		
5 years, under 6.....	337	64	19.0	273	81.0	256	78.9	7	2.1		
6 years, under 7.....	334	41	12.3	293	87.7	279	83.5	14	4.2		
7 years, under 8.....	98	11	11.2	87	88.8	78	79.6	9	9.2		
Girls.....	1,570	556	35.4	1,014	64.6	962	61.3	49	3.1	3	.2
2 years, under 3.....	250	199	79.6	51	20.4	51	20.4				
3 years, under 4.....	245	142	58.0	103	42.0	103	42.0				
4 years, under 5.....	275	93	33.8	182	66.2	182	66.2				
5 years, under 6.....	330	70	21.2	260	78.8	254	77.0	6	1.8		
6 years, under 7.....	348	43	12.4	305	87.6	276	79.3	27	7.8	2	.6
7 years, under 8.....	122	9	7.4	113	92.6	96	78.7	16	13.1	1	.8

Information regarding previous dental attention showed that only 3.2 per cent had had any teeth filled, such a very small proportion at once indicating ignorance regarding the importance of dental attention for temporary teeth. One child under 3 years of age had a

filled tooth, but 108 between 2 and 3 years had decayed teeth which had not been filled. The lack of dental care was almost as serious among the older children, 95 per cent of those between 6 and 7 with decayed teeth having received no attention whatever.

Other mouth defects.

Gum abscesses and malocclusion were the other most frequent mouth defects, 3.2 per cent showing the former and 11 per cent the latter defect. Malocclusion showed only slight variations by sex, but a decided increase with age, especially marked after the fifth year. This defect was found to occur approximately three times as often among children with positive diagnosis of adenoids as among others.

NASOPHARYNX.

Defects of the nasopharynx were the most common type of defect noted in this preschool group, occurring in 69 per cent of all cases, while the defects of the mouth claimed second place with 66.9 per cent. On the whole there was a slightly higher per cent of boys with nasopharyngeal defects than of girls, 71.9 and 66.2 per cent, respectively. The highest per cent of nasopharyngeal defects for both sexes (78.1 per cent) appeared in the sixth year.

TABLE XIV.—*Nasopharyngeal defect, by age and sex; children 2 to 7 years of age given physical examination.*

Nasopharyngeal defect, and sex.	Total children.		2 years, under 3.		3 years, under 4.		4 years, under 5.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes.....	3,125	100.0	511	100.0	496	100.0	549	100.0
With nasopharyngeal defect.....	2,157	69.0	250	48.9	312	62.9	395	71.9
Defective tonsils only.....	711	22.8	154	30.1	165	33.3	165	30.1
Adenoids only.....	342	10.9	19	3.7	34	6.9	54	9.8
Defective tonsils with adenoids.....	915	29.3	49	9.6	89	17.9	154	28.1
High-arch palate only.....	179	5.7	27	5.3	23	4.6	21	3.8
Other nasopharyngeal defect.....	10	.3	1	.2	1	.2	1	.2
Without nasopharyngeal defect.....	968	31.0	261	51.1	184	37.1	154	28.1
Boys.....	1,555	100.0	261	100.0	251	100.0	274	100.0
With nasopharyngeal defect.....	1,118	71.9	135	51.7	166	66.1	199	72.6
Defective tonsils only.....	348	22.4	79	30.3	83	33.1	81	29.6
Adenoids only.....	188	12.1	10	3.8	20	8.0	27	9.9
Defective tonsils with adenoids.....	488	31.4	31	11.9	49	19.5	82	29.9
High-arch palate only.....	91	5.9	15	5.7	13	5.2	9	3.3
Other nasopharyngeal defect.....	3	.2	.....	.....	1	.4	.....	.....
Without nasopharyngeal defect.....	437	28.1	126	48.3	85	33.9	75	27.4
Girls.....	1,570	100.0	250	100.0	245	100.0	275	100.0
With nasopharyngeal defect.....	1,039	66.2	115	46.0	146	59.6	196	71.3
Defective tonsils only.....	363	23.1	75	30.0	82	33.5	84	30.5
Adenoids only.....	154	9.8	9	3.6	14	5.7	27	9.8
Defective tonsils with adenoids.....	427	27.2	18	7.2	40	16.3	72	26.2
High-arch palate only.....	88	5.6	12	4.8	10	4.1	12	4.4
Other nasopharyngeal defect.....	7	.4	1	.4	.....	.....	1	.4
Without nasopharyngeal defect.....	531	33.8	135	54.0	99	40.4	79	28.7

TABLE XIV.—*Nasopharyngeal defect, by age and sex; children 2 to 7 years of age given physical examination—Concluded.*

Nasopharyngeal defect, and sex.	5 years, under 6.		6 years, under 7.		7 years, under 8.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes.....	667	100.0	682	100.0	220	100.0
With nasopharyngeal defect.....	521	78.1	517	75.8	162	73.6
Defective tonsils only.....	111	16.6	82	12.0	34	15.3
Adenoids only.....	97	14.5	106	15.5	32	14.5
Defective tonsils with adenoids.....	266	39.9	268	41.5	74	33.6
High-arch palate only.....	42	6.3	44	6.5	22	10.0
Other nasopharyngeal defect.....	5	.7	2	.3		
Without nasopharyngeal defect.....	146	21.9	165	24.2	58	26.4
Boys.....	337	100.0	334	100.0	98	100.0
With nasopharyngeal defect.....	274	81.3	268	80.2	76	77.6
Defective tonsils only.....	45	13.4	40	12.0	20	20.4
Adenoids only.....	53	15.7	62	18.6	16	16.3
Defective tonsils with adenoids.....	153	45.4	143	42.8	30	30.6
High-arch palate only.....	22	6.5	22	6.6	10	10.2
Other nasopharyngeal defect.....	1	.3	1	.3		
Without nasopharyngeal defect.....	63	18.7	66	19.8	22	22.4
Girls.....	330	100.0	348	100.0	122	100.0
With nasopharyngeal defect.....	247	74.8	249	71.6	86	70.5
Defective tonsils only.....	66	20.0	42	12.1	14	11.5
Adenoids only.....	44	13.3	44	12.6	16	13.1
Defective tonsils with adenoids.....	113	34.2	140	40.2	44	36.1
High-arch palate only.....	20	6.1	22	6.3	12	9.8
Other nasopharyngeal defect.....	4	1.2	1	.3		
Without nasopharyngeal defect.....	83	25.2	99	28.4	36	29.5

Adenoids.

Adenoids were definitely diagnosed in one-third (33.6 per cent) of all children examined, while an additional 6.6 per cent were considered as probably having adenoids, this being indicated by the presence of one or more suggestive signs, viz., mouth breathing, nasal discharge with excoriation of the nares, high-arch palate, adenoid facies, etc.

TABLE XV.—*Adenoid condition, by age and sex; children 2 to 7 years of age given physical examination.*

Adenoid condition, and sex.	Total children.		2 years, under 3.		3 years, under 4.		4 years, under 5.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes.....	3,125	100.0	511	100.0	496	100.0	549	100.0
With adenoids (definite).....	1,050	33.6	34	6.7	76	15.3	164	29.9
With adenoids (suspected).....	207	6.6	34	6.7	47	9.5	44	8.0
Without adenoids.....	1,868	59.8	443	86.7	373	75.2	341	62.1
Boys.....	1,555	100.0	261	100.0	251	100.0	274	100.0
With adenoids (definite).....	570	36.7	18	6.9	42	16.7	88	32.1
With adenoids (suspected).....	106	6.8	23	8.8	27	10.8	21	7.7
Without adenoids.....	879	56.5	220	84.3	182	72.5	165	60.2
Girls.....	1,570	100.0	250	100.0	245	100.0	275	100.0
With adenoids (definite).....	480	30.6	16	6.4	34	13.9	76	27.6
With adenoids (suspected).....	101	6.4	11	4.4	20	8.2	23	8.4
Without adenoids.....	989	63.0	223	89.2	191	78.0	176	64.0

TABLE XV.—Adenoid condition, by age and sex; children 2 to 7 years of age given physical examination—Concluded.

Adenoid condition, and sex.	5 years, under 6.		6 years, under 7.		7 years, under 8.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes.....	667	100.0	682	100.0	220	100.0
With adenoids (definite).....	315	47.2	361	52.9	100	45.5
With adenoids (suspected).....	48	7.2	28	4.1	6	2.7
Without adenoids.....	304	45.6	293	43.0	114	51.8
Boys.....	337	100.0	334	100.0	98	100.0
With adenoids (definite).....	187	55.5	191	57.2	44	44.9
With adenoids (suspected).....	19	5.6	14	4.2	2	2.0
Without adenoids.....	131	38.9	129	38.6	52	53.1
Girls.....	330	100.0	348	100.0	122	100.0
With adenoids (definite).....	128	38.8	170	48.9	56	45.9
With adenoids (suspected).....	29	8.8	14	4.0	4	3.3
Without adenoids.....	173	52.4	164	47.1	62	50.8

Adenoids were more prevalent among boys, throughout all the pre-school years. Only 6.7 per cent of the children under 3 years of age had adenoids definitely diagnosed and an equal number had "suspected" ones. The number of cases of positively diagnosed adenoids increased with age, reaching a maximum of 52.9 during the seventh year, while the maximum in "suspected" cases was reached during the fourth year. Whether adenoids are often present in younger children, and, if present, whether they are of such slow growth that their effects are not manifested by symptoms until the sixth or seventh year, is a question inviting further observation and scientific investigation.

Only insignificant differences in the prevalence of adenoids between the children of native and of foreign-born white mothers were found, the percentages being 34.3 and 33.8, respectively. The highest per cent of adenoids (41) was found in the children of German parentage, the lowest per cent (19.7) in the colored children.

Symptoms suggesting adenoids.

(a) *Mouth breathing.*—Of the entire group of children examined, 39.4 per cent were mouth breathers. Mouth breathing proved a remarkably constant symptom of adenoids, being present in 99.6 per cent of the cases. Only four cases of adenoids in which the child was apparently not a mouth breather were recorded and in six cases mouth breathing persisted after the removal of adenoids. It became a more pronounced habit or defect with age; 12.7 per cent of the children 2 to 3 years of age, and 56.2 per cent of those 6 to 7 years of age were mouth breathers. This symptom or defect was more common among boys, showing 43.1 per cent as compared with 35.8 per cent among girls.

Malocclusion and high-arch palate apparently had a direct relation to mouth breathing, since 62.4 per cent of the children with malocclusion and 65.4 per cent of those with high-arch palate were mouth breathers.

(b) *Nasal discharge*.—Nine and six tenths per cent of all children had what was considered a chronic nasal discharge, 10.1 per cent of the boys and 9 per cent of the girls.

(c) *Nasal obstruction*.—Thirty-eight and two-tenths per cent of the children showed nasal obstruction. Of the cases of malocclusion 59.8 per cent showed nasal obstruction, as compared with 35.5 per cent of those without malocclusion.

(d) *High-arch palate*.—According to the observations of the examiners, practically one-third of all the children, 1,027 out of 3,125, showed high-arch palate. This condition prevailed in more than half (57.4 per cent) of the cases of malocclusion, and in a still higher percentage (59.5) of the positive cases of adenoids.

(e) *Ear drums*.—Retracted drums, which were considered a corroborative sign of adenoids, were found in 258 of the cases examined by the specialist. This is probably an understatement, since not all children were observed by the specialist. In 94.6 per cent of the children with retracted drums, adenoids were also found.

Hearing appears to have been only slightly impaired by retracted drums either with or without adenoids, since it was found to be defective in only 8, or 3.5 per cent, of the 231 cases of retracted ear drums in which hearing was tested, as compared with 1 per cent in the rest of the group.

(f) *Adenoid facies*.—So-called typical adenoid facies were observed in slightly more than one-third (37.2 per cent) of the children having adenoids. This symptom was more common in boys and showed an increase with age to the seventh year.

Tonsils.

A little less than half (45.4 per cent) of the total number of children examined had tonsils which would generally be considered normal, since they showed no enlargement or evidence of disease. More than half (56.3 per cent) the children with abnormal tonsils also had adenoids. Of the entire group 2.5 per cent, or 1 in 40, gave a history of having had tonsils removed.

Slight enlargement of the tonsils was far more common than other tonsillar affections, being found in slightly more than one-third (34.9 per cent) of the children. The maximum of simple enlargement, which increased in prevalence with each year of age, was reached during the fifth year, and thereafter a steady and even decrease was shown. Possibly these findings suggest that enlargement without disease may be merely a hyperplasia of lymphoid tissue, normal at this period of life.

TABLE XVI.—Condition of tonsils, by age and sex; children 2 to 7 years of age given physical examination.

Condition of tonsils, and sex.	Total children.		2 years, under 3.		3 years, under 4.		4 years, under 5.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes.....	3,125	100.0	511	100.0	496	100.0	549	100.0
Tonsils:								
Normal.....	1,420	45.4	308	60.3	237	47.8	223	40.6
Defective.....	1,626	52.0	203	39.7	254	51.2	319	58.1
Enlarged only.....	1,091	34.9	188	36.8	211	42.5	244	44.4
Greatly enlarged only.....	129	4.1	5	1.0	10	2.0	20	3.6
Diseased.....	406	13.0	10	2.0	33	6.7	55	10.0
Enlarged.....	266	8.5	5	1.0	21	4.2	31	5.6
Greatly enlarged.....	134	4.3	5	1.0	12	2.4	23	4.2
Not enlarged.....	6	.2					1	.2
Removed.....	79	2.5			5	1.0	7	1.3
Boys.....	1,555	100.0	261	100.0	251	100.0	274	100.0
Tonsils:								
Normal.....	671	43.2	151	57.9	115	45.8	108	39.4
Defective.....	836	53.8	110	42.1	132	52.6	163	59.5
Enlarged only.....	574	36.9	101	38.7	110	43.8	126	46.0
Greatly enlarged only.....	61	3.9	3	1.1	5	2.0	8	2.9
Diseased.....	201	12.9	6	2.3	17	6.8	29	10.6
Enlarged.....	132	8.5	3	1.1	10	4.0	16	5.8
Greatly enlarged.....	65	4.2	3	1.1	7	2.8	12	4.4
Not enlarged.....	4	.3					1	.4
Removed.....	48	3.1			4	1.6	3	1.1
Girls.....	1,570	100.0	250	100.0	245	100.0	275	100.0
Tonsils:								
Normal.....	749	47.7	157	62.8	122	49.8	115	41.8
Defective.....	790	50.3	93	37.2	122	49.8	156	56.7
Enlarged only.....	517	32.9	87	34.8	101	41.2	118	42.9
Greatly enlarged only.....	68	4.3	2	.8	5	2.0	12	4.4
Diseased.....	205	13.1	4	1.6	16	6.5	26	9.5
Enlarged.....	134	8.5	2	.8	11	4.5	15	5.5
Greatly enlarged.....	69	4.4	2	.8	5	2.0	11	4.0
Not enlarged.....	2	.1						
Removed.....	31	2.0			1	.4	4	1.5

Condition of tonsils, and sex.	5 years, under 6.		6 years, under 7.		7 years, under 8.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes.....	667	100.0	682	100.0	220	100.0
Tonsils:						
Normal.....	263	39.4	285	41.8	104	47.3
Defective.....	377	56.5	365	53.5	108	49.1
Enlarged only.....	221	33.1	176	25.8	51	23.2
Greatly enlarged only.....	42	6.3	39	5.7	13	5.9
Diseased.....	114	17.1	150	22.0	44	20.0
Enlarged.....	78	11.7	99	14.5	32	14.5
Greatly enlarged.....	34	5.1	49	7.2	11	5.0
Not enlarged.....	2	.3	2	.3	1	.5
Removed.....	27	4.0	32	4.7	8	3.6
Boys.....	337	100.0	334	100.0	98	100.0
Tonsils:						
Normal.....	123	36.5	132	39.5	42	42.9
Defective.....	198	58.8	183	54.8	50	51.0
Enlarged only.....	112	33.2	98	29.3	27	27.6
Greatly enlarged only.....	27	8.0	15	4.5	3	3.1
Diseased.....	59	17.5	70	21.0	20	20.4
Enlarged.....	41	12.2	49	14.7	13	13.3
Greatly enlarged.....	16	4.7	21	6.3	6	6.1
Not enlarged.....	2	.6			1	1.0
Removed.....	16	4.7	19	5.7	6	6.1

TABLE XVI.—*Condition of tonsils, by age and sex; children 2 to 7 years of age given physical examination—Concluded.*

Condition of tonsils, and sex.	5 years, under 6.		6 years, under 7.		7 years, under 8.	
	Num-ber.	Per-cent distri-bution.	Num-ber.	Per-cent distri-bution.	Num-ber.	Per-cent distri-bution.
Girls.....	330	100.0	348	100.0	122	100.0
Tonsils:						
Normal.....	140	42.4	153	44.0	62	50.8
Defective.....	179	54.2	182	52.3	58	47.5
Enlarged only.....	109	33.0	78	22.4	24	19.7
Greatly enlarged only.....	15	4.5	24	6.9	10	8.2
Diseased.....	55	16.7	80	23.0	24	19.7
Enlarged.....	37	11.2	50	14.4	19	15.6
Greatly enlarged.....	18	5.5	28	8.0	5	4.1
Not enlarged.....			2	.6		
Removed.....	11	3.3	13	3.7	2	1.6

Greatly enlarged tonsils, i. e., those nearly filling the throat, were found in only 8.4 per cent of the children; in one-half these cases the tonsils were also diseased. This degree of enlargement also showed definite increase with age.

Tonsils considered "diseased" were found in 13 per cent of all the children in the group and showed a steady increase from 2 per cent in the 2- to 3-year group to 22 per cent in the 6- to 7-year group.

Practically all "diseased" tonsils showed some enlargement; in only six cases were the tonsils recorded as "diseased" but not "enlarged." Approximately two-thirds of the "diseased" tonsils were associated with slight enlargement, the other third being recorded as "greatly enlarged."

The standards adopted in this study for the recommendation of the removal of tonsils¹⁷ compelled a rather conservative viewpoint, but in spite of this it was considered by the specialist that removal was required in 39.3 per cent of the 1,626 cases of tonsillar defect. Parents were instructed to keep the throats of the remaining number under observation.

Removal was recommended more commonly among the older children, the percentages based upon total number of children having defective tonsils ranging from 6.9 at 2 to 3 years, to 61.9 at 6 to 7 years.

Removal of both tonsils and adenoids was recommended in 57.3 per cent of the cases in which both conditions were present. Removal of tonsils alone was necessary in but 7.1 per cent of all cases of defective tonsils.

Table XVII indicates a definite relation between diseased tonsils and age, but apparently shows little relation between decayed teeth and diseased tonsils.

¹⁷ See p. 25.

TABLE XVII.—Prevalence of diseased tonsils, by presence of decayed teeth; children 2 to 7 years of age given physical examination.

Age.	Children without decayed teeth.			Children with decayed teeth.		
	Total.	With diseased tonsils.		Total.	With diseased tonsils.	
		Number.	Per cent. ¹		Number.	Per cent. ¹
years, under 3.....	403	8	2.0	108	2	1.9
years, under 4.....	278	16	5.8	218	17	7.8
years, under 5.....	185	15	8.1	364	40	11.0
years, under 6.....	134	26	19.4	533	88	16.5
years, under 7.....	84	18	21.4	598	132	22.1
years, under 8.....	20	2	.....	200	42	.....

¹ Not shown where base is less than 50.

There appeared to be no striking difference in the condition of the tonsils of the children of native and foreign-born white parentage; effective tonsils were found in 51.5 per cent of the latter as against 3.2 per cent of the former. The highest per cent found in any nationality group was 57.9 in the Serbo-Croatians, while the lowest per cent (47.9) was found among the colored children.

Correlations with earnings did not even suggest that the children of well-to-do parents had fewer tonsillar defects than those of poorer families, except that a larger per cent in the higher income groups had had tonsils removed.

GLANDS.

The condition of the superficial external lymphatic glands as to size and associated infection is shown in Table XVIII.

Since a certain degree of swelling and hyperplasia is considered normal during early childhood, only glands described as "enlarged" or "greatly enlarged" were in this study considered as defects. However, in 17.6 per cent of the children glands were not even palpable," and for this reason further observation seems necessary to determine whether or not palpability should be considered normal even at this period of life.

TABLE XVIII.—Condition of glands, by age and sex; children 2 to 7 years of age given physical examination.

Condition of glands, and sex.	Total children.		2 years, under 3.		3 years, under 4.		4 years, under 5.	
	Num-ber.	Per cent distribu-tion.	Num-ber.	Per cent distribu-tion.	Num-ber.	Per cent distribu-tion.	Num-ber.	Per cent distribu-tion.
Both sexes.....	3,125	100.0	511	100.0	496	100.0	549	100.0
Glands:								
Nonpalpable.....	550	17.6	195	38.2	131	26.4	87	15.8
Palpable.....	1,667	53.3	250	48.9	299	58.3	312	56.8
Enlarged or greatly enlarged.....	908	29.1	66	12.9	76	15.3	150	27.3
Without associated infection.....	143	4.6	26	5.1	17	3.4	20	3.6
With associated infection.....	765	24.5	40	7.8	59	11.9	130	23.7
Boys.....	1,555	100.0	261	100.0	251	100.0	274	100.0
Glands:								
Nonpalpable.....	260	16.7	99	37.9	68	27.1	32	11.7
Palpable.....	806	51.8	121	50.2	128	55.0	160	58.4
Enlarged or greatly enlarged.....	499	31.4	31	11.9	45	17.9	82	29.9
Without associated infection.....	74	4.8	12	4.6	11	4.4	11	4.0
With associated infection.....	415	26.7	19	7.3	34	13.5	71	25.9
Girls.....	1,570	100.0	250	100.0	245	100.0	275	100.0
Glands:								
Nonpalpable.....	290	18.5	96	38.4	63	25.7	55	20.0
Palpable.....	861	54.8	119	47.6	151	61.6	152	55.3
Enlarged or greatly enlarged.....	419	26.7	35	14.0	31	12.7	68	24.7
Without associated infection.....	69	4.4	14	5.6	6	2.4	9	3.3
With associated infection.....	350	22.3	21	8.4	25	10.2	59	21.5
Condition of glands, and sex.	5 years, under 6.		6 years, under 7.		7 years, under 8.			
	Num-ber.	Per cent distribu-tion.	Num-ber.	Per cent distribu-tion.	Num-ber.	Per cent distribu-tion.		
Both sexes.....	667	100.0	682	100.0	220	100.0		
Glands:								
Nonpalpable.....	71	10.6	47	6.9	19	8.6		
Palpable.....	346	51.9	370	54.3	100	45.5		
Enlarged or greatly enlarged.....	250	37.5	265	38.9	101	45.9		
Without associated infection.....	34	5.1	28	4.1	18	8.2		
With associated infection.....	216	32.4	237	34.8	83	37.7		
Boys.....	337	100.0	334	100.0	98	100.0		
Glands:								
Nonpalpable.....	36	10.7	18	5.4	7	7.1		
Palpable.....	165	49.0	168	50.3	44	44.9		
Enlarged or greatly enlarged.....	136	40.4	148	44.3	47	48.0		
Without associated infection.....	17	5.0	13	3.9	10	10.2		
With associated infection.....	119	35.3	135	40.4	37	37.8		
Girls.....	330	100.0	348	100.0	122	100.0		
Glands:								
Nonpalpable.....	35	10.6	29	8.3	12	9.8		
Palpable.....	181	54.8	202	58.0	56	45.9		
Enlarged or greatly enlarged.....	114	34.5	117	33.6	54	44.3		
Without associated infection.....	17	5.2	15	4.3	8	6.6		
With associated infection.....	97	29.4	102	29.3	46	37.7		

TABLE XIX.—Condition of cervical glands, by condition of tonsils and teeth; children 2 to 7 years of age given physical examination.

Condition of tonsils and teeth.	Total children.	Condition of cervical glands.							
		Nonpalpable.		Palpable.		Enlarged.		Greatly enlarged.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	3,125	898	28.7	1,986	63.6	233	7.5	8	0.3
With decayed teeth or diseased tonsils.....	2,106	476	22.6	1,438	68.3	186	8.8	6	.3
Decayed teeth.....	1,700	407	23.9	1,155	67.9	133	7.8	5	.3
Diseased tonsils.....	85	24	28.2	56	65.9	5	5.9	1	.3
Both.....	321	45	14.0	227	70.7	48	15.0	1	.3
Without decayed teeth or diseased tonsils.....	1,019	422	41.4	548	53.8	47	4.6	2	.2

The highest per cent of "palpable" glands (58.3) was found among children in their fourth year. This was a considerable increase over the 48.9 per cent found among children in their third year. Only a slight diminution in palpability was noticeable in the succeeding age groups.

Definite "enlargement," sufficient to be considered pathological, was observed in 29.1 per cent of the cases; and all but about 15.7 per cent of this number showed an associated infection causing the enlargement.

"Enlarged" glands, with or without associated infection—while present in nearly 13 per cent at 2 to 3 years of age—showed numbers steadily increasing with age, and no tendency to diminution even during the seventh year. As with most other defects, there was a slightly higher per cent in boys.

The submaxillary and cervical glands were by far the most commonly "enlarged," and showed associated infection more frequently than any other group. While not so many children had "palpable" submaxillary glands (43 per cent) as had "palpable" cervical glands (63.6 per cent), a larger number—nearly three times as many—had "enlarged" submaxillary glands (20.9 per cent) than had "enlarged" cervical glands (7.5 per cent). A very definite form of infection, such as decayed teeth or diseased tonsils, was associated with 84.3 per cent of the cases of "enlarged" glands.

In 14 per cent of the children with both decayed teeth and diseased tonsils, the cervical glands were not even "palpable;" and 21.2 per cent of the children with these defects had "nonpalpable" submaxillary glands.

Inguinal glands were "palpable" in 1,028 children, or 32.9 per cent of all those included in the study, and "enlarged" in 49 children—36 boys and 13 girls. No associated infection was reported with any condition of this group of glands.

Twenty-one boys and 39 girls were found to have thyroid enlargement, a condition unusual for children of these ages, although fairly common at later ages in the Great Lakes region.

Apparently little significance can be attached to the findings in regard to the other gland groups. Occipital glands were "palpable" in only 21 cases (0.7 per cent) and "enlarged" in only 2. The axillary group of glands were "palpable" in 3.2 per cent of the cases, and enlarged in only 0.4 per cent. "Palpable" epitrochlear glands were reported in 2 boys.

Correlations to determine any existing relations between the condition of the glands and other physical factors were made. There appeared to be no connection between glandular enlargement and underweight; in fact, a higher percentage (20.1) of those 10 per cent or more underweight had normal glands than of those of average or above average weight (17.6). Similarly, a higher percentage (29.1) of "enlarged" glands was found in children of average weight, or above, than in those 10 per cent or more below average (27.4 per cent).

Of 243 pale or anemic children, 133 (54.7 per cent) had "palpable" glands and 98 (40.3 per cent) had "enlarged" glands.

Glandular defects showed more striking difference according to nationality than did other defects, being found in 32.5 per cent of the children of foreign-born parentage and in only 23.5 per cent of those of native parentage. The highest percentage having glandular defects (47) was found among the Lithuanians.

TABLE XX.—Condition of glands, by color and nationality of mother; children 2 to 7 years of age given physical examination.

Color and nationality of mother.	Total children.	Condition of glands.									
		Non-palpable.		Palpable.		Enlarged or greatly enlarged.					
						Total.		With associated infection.		Without associated infection.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	3,125	550	17.6	1,667	53.3	908	29.1	765	24.5	143	4.6
White.....	3,047	544	17.9	1,617	53.1	886	29.1	752	24.7	134	4.4
Native.....	1,151	254	22.1	627	54.5	270	23.5	236	20.5	34	3.0
Foreign-born.....	1,896	290	15.3	990	52.2	616	32.5	516	27.2	100	5.3
Serbo-Croatian.....	321	39	12.1	168	52.3	114	35.5	96	29.9	18	5.6
Slovak.....	313	52	16.6	160	51.1	101	32.3	92	29.4	9	2.9
Polish.....	224	37	16.5	113	50.4	74	33.0	60	26.8	14	6.3
Hungarian.....	176	18	10.2	102	58.0	56	31.8	44	25.0	12	6.8
Italian.....	157	16	10.2	94	59.9	47	29.9	32	20.4	15	9.6
German.....	139	26	18.7	74	53.2	39	28.1	34	24.5	5	3.6
Lithuanian.....	83	7	8.4	37	44.6	39	47.0	32	38.6	7	8.4
All other.....	483	95	19.7	242	50.1	146	30.2	126	26.1	20	4.1
Negro.....	71	5	7.0	46	64.8	20	28.2	12	16.9	5	11.3
Not reported.....	7	1	.....	4	.....	2	.....	1	.....	1	.....

¹ Not shown where base is less than 50.

Colored children showed a higher per cent of "palpable" glands than any other racial group; a per cent of "defective" glands midway between those of the children of foreign-born white parentage and of native white parentage; and a decided lack of "associated infection" with all degrees of enlargement.

LUNGS.

A comparatively small number of children showed symptoms of respiratory disease. Positive diagnoses on one examination were possible in only 11 cases (0.4 per cent), the majority of these being bronchitis. An additional 21 cases (0.7 per cent) were considered suspicious, and were referred for medical supervision. A slightly higher percentage (18.8) of diseased tonsils was found in children with lung disease (definite and suspected) than in those without such disease (12.9 per cent).

HEART.

A positive diagnosis of organic heart disease was possible in only 14 cases, or 0.4 per cent of all. A group of 85 cases (2.7 per cent) were reported as "suspected heart disease" and requiring observation, since it was impossible to make a definite diagnosis on only one examination. Functional murmurs without other heart symptoms were reported in 68 cases (2.2 per cent). Only 2 cases of functional murmur were reported as early as the third year, but the number steadily increased with age, reaching 25 during the seventh year.

SKIN.

Under this subject were included not only definite skin diseases but pediculosis as well. This latter condition far exceeded all other skin affections, being found in 4.6 per cent of all the children. Pediculosis was three times as frequent among girls as among boys, and its prevalence increased steadily with age, so that by far the larger number of cases was found among children over 5 years of age. The number of cases of pediculosis of the body was practically negligible.

Of the skin diseases, eczema was most common, occurring in 80 cases (2.6 per cent). There were also 67 cases of infected sores; 29 of ringworm, chiefly of scalp and face; 9 cases of scabies; and 8 cases of impetigo. With the exception of infected sores and ringworm these diseases were more commonly found in the later ages, i. e., those over 5 years.

Under "other conditions" were listed scars, with their causes when these could be ascertained. A surprisingly large number, 165, or 5.3 per cent, were found to have scars of one kind or another. "Unreported causes" was recorded for the majority, but the most commonly reported causes were burns (26.7 per cent) and operations (15.2 per cent). Doubtless many of the scars, the causes of which were unreported, were in fact the result of burns or other accidents.

Abnormal skin conditions were more common in the older children, 14.1 per cent in the seventh year or later as compared with 4.9 per cent during the third year.

No marked relation was shown between underweight and abnormal skin condition, but malnutrition, plus skin defects, was found to be accompanied by a high per cent of anemia. The increase in skin defects was from zero among the "excellent" to 21.6 per cent among the "good," 27.3 per cent among the "poor," and 60 per cent among the "very poor."

Children of foreign-born mothers were more commonly subject to abnormal skin conditions than those of native parents, the percentages being 13.2 and 4.9, respectively. The groups in which the percentage of this defect most nearly approached that of the native white group were the German, with 5.8 per cent; and the Polish, with 7.1 per cent; a maximum of 22.9 per cent was reached among the Italian and the Lithuanian.

Correlations with incomes show definitely that the children of the more prosperous families were freer from abnormal skin conditions than those in the lower-income groups; the percentage of children in whom such conditions were found decreased from 16.4 among families where the father earned less than \$850 to only 5.6 in the group where the fathers earned \$2,250 or more. Low standards of living, including lack of bathing facilities, ignorance as to proper care and habits of the body and proper food, etc., prevailed to a greater degree among the families of the low-income groups.

ABDOMEN.

Abdominal distension was most frequently observed in the younger children, being present in 19.8 per cent of those in their third year of age. A gradual decrease in the prevalence of this defect was noticeable in each succeeding age group. This condition was evenly distributed according to sex.

Distended abdomen was more commonly observed in children with rachitic defects (23.1 per cent) than in nonrachitic children (11 per cent).

TABLE XXI.—*Distended abdomen, by age and sex; children 2 to 7 years of age given physical examination.*

Age and sex.	Total children.	With distended abdomen.		Without distended abdomen.
		Number.	Per cent.	
Both sexes.....	3, 125	423	13. 5	2, 702
2 years, under 3.....	511	101	19. 8	410
3 years, under 4.....	496	75	15. 1	421
4 years, under 5.....	549	70	12. 8	479
5 years, under 6.....	667	77	11. 5	590
6 years, under 7.....	682	74	10. 9	608
7 years, under 8.....	220	26	11. 8	194

TABLE XXI.—*Distended abdomen, by age and sex; children 2 to 7 years of age given physical examination—Concluded.*

Age and sex.	Total children.	With distended abdomen.		Without distended abdomen.
		Number.	Per cent.	
Boys.....	1,555	214	13.8	1,341
2 years, under 3.....	261	50	19.2	211
3 years, under 4.....	251	35	13.9	216
4 years, under 5.....	274	40	14.6	234
5 years, under 6.....	337	42	12.5	295
6 years, under 7.....	334	32	9.6	302
7 years, under 8.....	98	15	15.3	83
Girls.....	1,570	209	13.3	1,361
2 years, under 3.....	250	51	20.4	199
3 years, under 4.....	245	40	16.3	205
4 years, under 5.....	275	30	10.9	245
5 years, under 6.....	330	35	10.6	295
6 years, under 7.....	348	42	12.1	306
7 years, under 8.....	122	11	9.0	111

Of the children of average weight or above, 19.5 per cent had abdominal defect, while smaller percentages—11.4, 10.5, and 12.5—of the children in the underweight groups showed this defect.

There were 11 cases of enlarged liver—0.4 per cent of all examined—and none of enlarged spleen.

Hernias were found in 47 cases, 36 umbilical and 11 inguinal, only 1 of the latter variety being in a girl. Four boys had operations for this condition.

BONY AND MUSCULAR SYSTEMS.

A simple enumeration of bony and muscular defects is given in General Table 7, page 69. One defect of the bony and muscular system appeared in 41.9 per cent of the children. Distribution of these defects by age showed a gradual increase from 24.9 per cent in the third year to 56.2 per cent in the seventh year.

TABLE XXII.—*Defects of bony and muscular system, by age and sex; children 2 to 7 years of age given physical examination.*

Age and sex.	Total children.	With defects of bony and muscular system.		Without defects of bony and muscular system.
		Number.	Per cent.	
Both sexes.....	3,125	1,308	41.9	1,817
2 years, under 3.....	511	127	24.9	384
3 years, under 4.....	496	144	29.0	352
4 years, under 5.....	549	204	37.2	345
5 years, under 6.....	667	324	48.6	343
6 years, under 7.....	682	383	56.2	299
7 years, under 8.....	220	126	57.3	94
Boys.....	1,555	709	45.6	846
2 years, under 3.....	261	68	26.1	193
3 years, under 4.....	251	76	30.3	175
4 years, under 5.....	274	111	40.5	163

TABLE XXII.—*Defects of bony and muscular system, by age and sex; children 2 to 7 years of age given physical examination—Concluded.*

Age and sex.	Total children.	With defects of bony and muscular system.		Without defects of bony and muscular system.
		Number.	Percent.	
5 years, under 6.....	337	183	54.3	154
6 years, under 7.....	334	208	62.3	126
7 years, under 8.....	98	63	64.3	35
Girls.....	1,570	590	38.2	971
2 years, under 3.....	250	59	23.6	191
3 years, under 4.....	245	68	27.8	177
4 years, under 5.....	275	93	33.8	182
5 years, under 6.....	330	141	42.7	189
6 years, under 7.....	348	175	50.3	173
7 years, under 8.....	122	63	51.6	59

On the whole, the percentage of boys (45.6) with defects of the bony and muscular systems, exceeded that of girls (38.2).

In general, the incidence of these defects in the various weight groups was not sufficiently uniform to suggest any definite correlation with weight. (See general Table 5, p. 68.)

Bony defects of rachitic origin.

Since a large number of the bony defects were considered to be of rachitic origin, tabulations based on this causative factor were made.

Bony defects tabulated as "unquestionably" the result of rickets were: Beaded ribs, Harrison's groove, enlarged epiphyses, pigeon breast, craniotabes, and lumbar kyphosis if it was accompanied by one of the group of "probable signs" of rickets such as large square head or open fontanelle after 18 months of age. Bowlegs or knock-knees were considered as merely additional evidence of rickets and, unless other rachitic signs appeared with them, were disregarded. In combination with lumbar kyphosis they were called unquestionable signs of rickets.

Three hundred and eighty-eight children (12.4 per cent) were considered as having defects definitely the result of rickets, while an additional 79 children (2.5 per cent) had defects "probably of rachitic origin," bringing the total of those having defects possibly due to early rickets to 14.9 per cent.

Rickets is usually conceded to be a disease of infancy, the symptoms of which disappear early under proper dietary and hygienic conditions; hence the prevalence and persistence of these excessively high percentages probably due to rickets lead to the inference that the corrective measures of diet, hygiene, and environment had not entered into the lives of this preschool group. This conclusion is perhaps further substantiated by the fact that these defects showed

no tendency to diminish, even in the older children, but increased steadily.

Correlations between bony defects of rachitic origin and the condition of the teeth showed a higher per cent (75.2) of decayed teeth in the children with such bony defects than in those without (62.8).

Slightly more than half (54.2 per cent) of the children with rachitic bone defects were found to have defective tonsils as compared with 51.7 per cent of children without such defects.

Children without rachitic bone defects had a much higher per cent of nonpalpable lymphatic glands (19.4 per cent) than those with such defects (7.3 per cent).

The prevalence of rachitic defects was greater among the children of foreign-born white parentage (17.7 per cent) than among those of native white parentage (10.4 per cent). Of the former, the Serbo-Croatians had the highest per cent (22.1 per cent). Contrary to the general impression, the colored children, although a small group, showed only 14.1 per cent with rachitic defects, a per cent slightly less than the average for the entire group (14.9 per cent).

While rachitic defects appeared to be slightly associated with underweight, their incidence increased only from 13.1 per cent in the "above average" group to 18.8 per cent in the group most seriously underweight. (See general Table 5, p. 68.) On the other hand, only 12.2 per cent of the children with rachitic defects as compared with 9.3 per cent of the nonrachitic showed 10 per cent or more deviation from average weight for height.

Postural defects.

Included in this group were the defects due to lack of muscular development, namely, round shoulders, winged scapulæ, scoliosis and lordosis, and, when not associated with rickets, bowlegs and knock-knees.

The total number of children with one or more postural defects was 793, or 25.4 per cent of all those examined. In children 6 to 7 years of age the number increased to over one-third of the total. This at first appears to be an excessively high percentage; but to what extent the conditions may be interpreted as actual defects is perhaps debatable, considering that between the ages of 2 and 6 years muscular development is poor and muscle tonus practically lacking. This characteristic lack of muscular development probably explains in part the frequency of winged scapulæ in this study. The percentage of children having this defect was 14.5 for the whole group, and was noticeably higher after the fourth year. The increase in scoliosis appeared more prominently after the fifth year.

Postural defects, on the whole, appeared to bear some relation to underweight; for 28.7 per cent of the children 10 per cent or more

below average weight for height had one or more postural defects, as contrasted with 20.4 per cent of those whose weight was average or above.

TABLE XXIII.—*Postural defects, by age and sex; children 2 to 7 years of age given physical examination.*

Age and sex.	Total children.	With postural defects.		Without postural defects.
		Number.	Per cent.	
Both sexes.....	3,125	708	25.4	2,332
2 years, under 3.....	511	56	11.0	455
3 years, under 4.....	496	68	13.7	428
4 years, under 5.....	549	117	21.3	432
5 years, under 6.....	667	220	33.0	447
6 years, under 7.....	682	255	37.4	427
7 years, under 8.....	220	77	35.0	143
Boys.....	1,555	418	26.9	1,137
2 years, under 3.....	261	30	11.5	231
3 years, under 4.....	251	40	15.9	211
4 years, under 5.....	274	56	20.4	218
5 years, under 6.....	337	125	37.1	212
6 years, under 7.....	334	131	39.2	203
7 years, under 8.....	96	36	36.7	60
Girls.....	1,570	375	23.9	1,195
2 years, under 3.....	250	26	10.4	224
3 years, under 4.....	245	28	11.4	217
4 years, under 5.....	275	61	22.2	214
5 years, under 6.....	330	95	28.8	235
6 years, under 7.....	348	124	35.6	224
7 years, under 8.....	122	41	33.6	81

Among the colored the percentage of postural defects was very high—52.1; among the children of native white parentage it was 21.8, and among those of foreign-born white parentage it was 26.6.

The influence of environment and living standards upon development as reflected in faulty posture is shown by the incidence of the highest per cent of postural defects in the lower wage group; this per cent was 27.6 in families whose incomes were less than \$1,450, as contrasted with 22.1 per cent in families whose incomes were \$1,450 or over. (See General table 4, p. 67.)

Arch measurements.

Since there appeared to be no standard for grading flat foot, and since anatomical data regarding arches in children's feet were notably lacking, the suggestion of a prominent orthopedist that the study include a measurement of the height of the arches in children was carried out. (See instructions, p. 20.) The results are herewith given without any attempt at interpretation, since obviously other and more detailed investigations on the subject must follow before the material in this report can be evaluated.

Measurements were made on 3,064 children, and in only 65 cases were the arch heights found to be unequal in the two feet. In computing median arch measurements these 65 cases were discarded.

The accompanying table gives median arch measurements according to sex and age:

Median arch measurements.

Age.	Both sexes.	Boys.	Girls.
	Inches.	Inches.	Inches.
2 years, under 3.....	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$
3 years, under 4.....	1	1	1
4 years, under 5.....	1	1	1
5 years, under 6.....	1	1	1
6 years, under 7.....	$1\frac{1}{2}$	$1\frac{1}{2}$	1
7 years, under 8.....	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$

The increase in arch height with age probably parallels the muscular development in the feet, which apparently increases with use. Careful observations were made and recorded as to the relation of the axes of the foot and leg while the child was walking. Of all the children 81.3 per cent had what is commonly known as the "straight" type of foot, i. e., they toed straight ahead, the axes of the foot and leg making a right angle; 10.3 per cent were of the "inflared" type with the foot deflected in; while 6.9 per cent were the "outflared" type with the foot deflected out.

Correlations between the position of the foot and the median height of the arch indicate that the deflections in and out increased with the height of the arch, as the accompanying figures show:

Median arch measurements.

Age.	Inflare.	Outflare.	Straight foot.
	Inches.	Inches.	Inches.
2 years, under 3.....	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$
3 years, under 4.....	1	1	1
4 years, under 5.....	1	1	1
5 years, under 6.....	1	1	1
6 years, under 7.....	$1\frac{1}{2}$	$1\frac{1}{2}$	1
7 years, under 8.....	$1\frac{1}{2}$	$1\frac{1}{2}$	1

NERVOUS SYSTEM.

The prevalence of defects of the nervous system is shown in General Table 1.¹⁸ Of the entire group, nervous defects were noted in 75 children—only 2.4 per cent. Individual defects were too few to be of definite value statistically, and the clinical findings are equally valueless without a more detailed and thorough examination than was possible in this study.

¹⁸ See p. 65.

Functional speech defects were noted in 1.7 per cent of the children, practically equally distributed according to sex. They were chiefly stammering, stuttering, and lisping, with a few cases of poor articulation.

MENTAL CONDITION.

No mental tests were conducted in connection with this study. If the observations of the examining physicians or nurses led to even a suspicion of abnormality, the observations were supplemented by information gained from the teacher, the mother, or the school physician who conducted mental tests. Nineteen apparent mental defectives and 18 suspected cases came under the observation of the physicians during the course of the study.

GENTALIA.

An astonishingly high per cent of genital defects was found in boys, due almost entirely to adherent or contracted prepuce, there being 437 cases (28.1 per cent) of the former and 289 (18.6 per cent) of the latter. There were recorded only 22 cases (1.4 per cent) of other abnormalities of the genitalia than of the prepuce.

The data from this study are submitted merely as the results of careful routine physical examinations based upon somewhat standardized methods.

No attempt has been made to draw conclusions, since the findings point very definitely to the need for further consecutive study of the child before correlations between existing physical defects and their possible causes may be determined. Studies of racial, economic, and environmental factors, breast feeding, growth, intercurrent diseases, diet, sleep, and récreation, correlated with the objective findings of periodic physical examinations covering the period from birth to school age, would undoubtedly add a great deal to the present knowledge of the physical development of the child and the factors which modify it. Such studies would also in time afford a means of evaluating present efforts in the field of child hygiene.

APPENDIXES.

APPENDIX A. GENERAL TABLES ON PHYSICAL FINDINGS OF THE PRESCHOOL CHILD.

TABLE 1.—Prevalence of defects, by sex; children 2 to 7 years of age given physical examination.

Summary of defects.	Both sexes.		Boys.		Girls.	
	Num-ber.	Per cent distri-bution.	Num-ber.	Per cent distri-bution.	Num-ber.	Per cent distri-bution.
Total.....	3,125	100.0	1,555	100.0	1,570	100.0
Without defects.....	149	4.8	48	3.1	101	6.4
With defects.....	2,976	95.2	1,507	96.9	1,469	93.6
Underweight (10 per cent and over).....	303	9.7	149	9.0	153	10.4
Anemia.....	243	7.8	113	7.3	130	8.3
Head defects.....	163	5.2	105	6.8	58	3.7
Eye defects.....	1,890	28.5	437	28.1	453	28.9
Defective vision.....	738	23.6	355	23.5	383	24.7
Other defect.....	245	7.8	127	8.2	118	7.5
Ear defects.....	48	1.5	30	1.9	18	1.1
Defective hearing.....	25	1.4	14	1.6	11	1.2
Other defect.....	25	.8	17	1.1	8	.5
Mouth defects.....	2,091	66.9	1,043	67.1	1,048	66.8
Nasopharyngeal defects.....	2,157	69.0	1,118	71.9	1,039	66.2
Enlarged glands.....	908	29.1	489	31.4	419	26.7
Heart defects.....	99	3.2	48	3.1	51	3.2
Lung defects.....	32	1.0	21	1.4	11	.7
Abnormal skin condition.....	318	10.2	137	8.8	181	11.5
Abdominal defects.....	464	14.8	234	15.0	230	14.6
Defects of bony and muscular system.....	1,308	41.9	709	45.6	599	38.2
Bony defects of rachitic origin.....	467	14.9	304	19.5	163	10.4
Postural defects.....	793	25.4	418	26.9	375	23.9
Defects of nervous system.....	75	2.4	42	2.7	33	2.1
Defects of mentality.....	37	1.2	26	1.7	11	.7
Defects of genitalia.....	769	24.6	732	47.1	37	2.4

¹ In 1,081 cases vision was not tested; hence this number does not include all possible cases of defective vision.

² Per cent based on 2,044 cases tested, 998 boys and 1,046 girls.

³ In 1,279 cases hearing was not tested; hence this number does not include all possible cases of defective hearing.

⁴ Per cent based on 1,846 cases tested, 901 boys and 945 girls.

TABLE 2.—Specified defects, by age and sex; children 2 to 7 years of age given physical examination.

Age and sex.	Total children.	With anemia.		Underweight (10 per cent and over).		With decayed teeth.		With defective tonsils.		With adenoids, positive and suspected.	
		Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.
Both sexes.....	3,125	243	7.8	303	9.7	2,021	64.7	1,626	52.0	1,237	40.2
2 years, under 3.....	511	5	1.0	85	16.6	108	21.1	203	39.7	68	13.3
3 years, under 4.....	496	3	.6	59	11.9	218	44.0	254	51.2	123	24.8
4 years, under 5.....	549	21	3.8	56	10.2	364	66.3	319	58.1	208	37.9
5 years, under 6.....	667	67	10.0	44	6.6	533	79.9	377	56.5	363	54.4
6 years, under 7.....	682	114	16.7	48	7.0	598	87.7	365	53.5	389	57.0
7 years, under 8.....	220	33	15.0	11	5.0	200	90.9	108	49.1	106	48.2

TABLE 2.—Specified defects, by age and sex; children 2 to 7 years of age given physical examination—Concluded.

Age and sex.	Total children.	With anemia.		Under weight (10 per cent and over).		With decayed teeth.		With decayed tonsils.		With adenoids, positive and suspected.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Boys.....	1,555	113	7.3	140	9.0	1,007	64.8	836	53.8	676	43.5
2 years, under 3.....	261	2	.8	43	16.5	57	21.8	110	42.1	41	15.7
3 years, under 4.....	251	1	.4	29	11.6	115	45.8	132	52.6	69	27.5
4 years, under 5.....	274	10	3.6	28	10.2	182	66.4	163	59.5	109	39.8
5 years, under 6.....	337	32	9.5	16	4.7	273	81.0	198	58.8	206	61.1
6 years, under 7.....	334	53	15.9	20	6.0	293	87.7	183	54.8	205	61.4
7 years, under 8.....	98	15	15.3	4	4.1	87	88.8	50	51.0	46	46.9
Girls.....	1,570	130	8.3	163	10.4	1,014	64.6	790	50.3	581	37.0
2 years, under 3.....	250	3	1.2	42	16.8	51	20.4	93	37.2	27	10.8
3 years, under 4.....	245	2	.8	30	12.2	103	42.0	122	49.8	54	22.0
4 years, under 5.....	275	11	4.0	28	10.2	182	66.2	156	56.7	99	36.0
5 years, under 6.....	330	35	10.6	28	8.5	260	78.8	179	54.2	157	47.6
6 years, under 7.....	348	61	17.5	28	8.0	305	87.6	182	52.3	184	52.9
7 years, under 8.....	122	18	14.8	7	5.7	113	92.6	58	47.5	60	49.2

Age and sex.	With enlarged glands.		With abnormal skin condition.		With bony and muscular defects.					
					Total.		Of rachitic origin.		Postural.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Both sexes.....	908	29.1	318	10.2	1,308	41.9	467	14.9	793	25.4
2 years, under 3.....	66	12.9	25	4.9	127	24.9	54	10.6	56	11.0
3 years, under 4.....	76	15.3	27	5.4	144	29.0	42	8.5	68	13.7
4 years, under 5.....	150	27.3	50	9.1	204	37.2	73	13.3	117	21.3
5 years, under 6.....	250	37.5	80	12.0	324	48.6	106	15.9	220	33.0
6 years, under 7.....	265	38.9	96	14.1	383	56.2	148	21.7	255	37.4
7 years, under 8.....	101	45.9	40	18.2	126	57.3	44	20.0	77	35.0
Boys.....	489	31.4	137	8.8	708	45.6	304	19.5	418	26.9
2 years, under 3.....	31	11.9	11	4.2	68	26.1	33	12.6	30	11.5
3 years, under 4.....	45	17.9	16	6.4	76	30.3	22	8.8	40	15.9
4 years, under 5.....	82	29.9	23	8.4	111	40.5	48	17.5	56	20.4
5 years, under 6.....	136	40.4	38	11.3	183	54.3	75	22.3	125	37.1
6 years, under 7.....	148	44.3	32	9.6	208	62.3	98	29.3	131	39.2
7 years, under 8.....	47	48.0	17	17.3	63	64.3	28	28.6	36	36.7
Girls.....	419	26.7	181	11.5	599	38.2	163	10.4	375	23.9
2 years, under 3.....	35	14.0	14	5.6	59	23.6	21	8.4	26	10.4
3 years, under 4.....	31	12.7	11	4.5	68	27.8	20	8.2	28	11.4
4 years, under 5.....	68	24.7	27	9.8	93	33.8	25	9.1	61	22.2
5 years, under 6.....	114	34.5	42	12.7	141	42.7	31	9.4	95	28.8
6 years, under 7.....	117	33.6	64	18.4	175	50.3	50	14.4	124	35.6
7 years, under 8.....	54	44.3	23	18.9	63	51.6	16	13.1	41	33.6

TABLE 3.—Specified defects, by color and nationality of mother; children 2 to 7 years of age given physical examination.

Defect.	Total children.		Children of—						Mothers whose nationality was not reported. ¹
			Native white mothers.		Foreign-born white mothers.		Negro mothers.		
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
Total.....	3,125	100.0	1,151	100.0	1,896	100.0	71	100.0	7
Anemia.....	243	7.8	71	6.2	164	8.6	8	11.3	
Underweight (10 per cent and over).....	303	9.7	114	9.9	182	9.6	7	9.9	
Eye disease or defect other than of vision.....	245	7.8	86	7.5	158	8.3	1	1.4	
Defective tonsils.....	1,626	52.0	612	53.2	976	51.5	34	47.9	4
Adenoids (definite and suspected).....	1,257	40.2	473	41.1	761	40.1	22	31.0	1
Enlarged glands.....	908	29.1	270	23.5	616	32.5	20	28.2	2
Abnormal skin condition.....	318	10.2	56	4.9	250	13.2	12	16.9	
Bony defects of rachitic origin.....	467	14.9	120	10.4	336	17.7	10	14.1	1
Postural defects.....	793	25.4	251	21.8	505	26.6	37	52.1	

¹ Per cent not shown where base is less than 50.

TABLE 4.—Specified defects, by earnings of chief breadwinner; children 2 to 7 years of age given physical examination.

Defect.	Total children.		Earnings of chief breadwinner.					
			Under \$1,450.		\$1,450 and over.		Not reported.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	3,125	100.0	1,767	100.0	1,178	100.0	180	100.0
Anemia.....	243	7.8	149	8.4	76	6.5	18	10.0
Underweight (10 per cent and over).....	303	9.7	176	10.0	111	9.4	16	8.9
Eye disease or defect other than of vision.....	245	7.8	141	8.0	87	7.4	17	9.4
Defective tonsils.....	1,626	52.0	938	53.1	602	51.1	86	47.8
Adenoids (definite and suspected).....	1,257	40.2	714	40.4	476	40.4	67	37.2
Enlarged glands.....	908	29.1	533	30.2	322	27.3	53	29.4
Abnormal skin condition.....	318	10.2	214	12.1	80	6.8	24	13.3
Bony defects of rachitic origin.....	467	14.9	296	16.8	149	12.6	22	12.2
Postural defects.....	793	25.4	487	27.6	260	22.1	46	25.6

TABLE 5.—Per cent of children with specified defects, by deviation from average weight for height; children 2 to 7 years of age given physical examination.

Defect.	Total children.	Relation of weight to height.			
		Average and above.	Below average.		
			Less than 7 per cent.	7 per cent, less than 10.	10 per cent and over.
Total.....	100.0	100.0	100.0	100.0	100.0
Anemia.....	7.8	5.5	7.9	10.8	13.9
Eye disease.....	5.0	4.4	5.4	6.2	5.0
Decayed teeth.....	64.7	66.7	66.9	61.0	51.2
Naso-pharyngeal defects.....	69.0	70.5	70.0	64.1	64.0
Defective tonsils, no adenoids.....	22.8	23.1	21.9	21.4	26.1
Adenoids, no defective tonsils.....	11.0	11.8	11.8	9.0	6.6
Defective tonsils and adenoids.....	29.3	30.4	29.4	28.2	25.1
Diseased tonsils.....	13.0	13.0	13.0	15.2	10.9
Other.....	6.0	5.2	6.9	5.6	6.3
Enlarged glands.....	29.1	29.1	29.1	30.3	27.4
Abdominal defects.....	14.8	19.5	11.4	10.5	12.5
Defects of bony and muscular system.....	41.9	37.6	45.2	42.1	47.2
Bony defects of rachitic origin.....	14.9	13.1	16.2	14.2	18.8
Postural defects.....	25.4	20.4	28.6	30.7	28.7

TABLE 6.—Specified skin diseases, by age and sex; children 2 to 7 years of age given physical examination.

Age and sex.	Total children.	Children with—											
		Eczema.		Pediculosis.		Impetigo.		Infected sores.		Ringworm.		Scabies.	
		Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Both sexes.....	3,125	80	2.6	145	4.6	8	0.3	67	2.1	29	0.9	9	0.3
2 years, under 3.....	511	6	1.2	2	.4	2	.4	11	2.2	5	1.0		
3 years, under 4.....	496	2	.4	6	1.2	3	.6	11	2.2	6	1.2		
4 years, under 5.....	549	16	2.9	12	2.2			17	3.1	3	.5	4	.7
5 years, under 6.....	667	21	3.1	40	6.0			12	1.8	7	1.0	2	.3
6 years, under 7.....	682	27	4.0	56	8.2	3	.4	12	1.8	6	.9	3	.4
7 years, under 8.....	220	8	3.6	29	13.2			4	1.8	2	.9		
Boys.....	1,555	49	3.2	35	2.3	3	.2	35	2.3	18	1.2	5	.3
2 years, under 3.....	261	2	.8	1	.4	1	.4	6	2.3	1	.4		
3 years, under 4.....	251	2	.8	1	.4	2	.8	6	2.4	6	2.4		
4 years, under 5.....	274	9	3.3	3	1.1			8	2.9	2	.7	2	.7
5 years, under 6.....	337	13	3.9	15	4.5			6	1.8	3	.9	1	.3
6 years, under 7.....	334	19	5.7	5	1.5			6	1.8	4	1.2	2	.6
7 years, under 8.....	98	4	4.1	10	10.2			3	3.1	2	2.0		
Girls.....	1,570	31	2.0	110	7.0	5	.3	32	2.0	11	.7	4	.3
2 years, under 3.....	250	4	1.6	1	.4	1	.4	5	2.0	4	1.6		
3 years, under 4.....	245			5	2.0	1	.4	5	2.0	1	.4		
4 years, under 5.....	275	7	2.5	9	3.3			9	3.3	1	.4	2	.7
5 years, under 6.....	330	8	2.4	25	7.6			6	1.8	4	1.2	1	.3
6 years, under 7.....	348	8	2.3	51	14.7	3	.9	6	1.7	2	.6	1	.3
7 years, under 8.....	122	4	3.3	19	15.6			1	.8				

PHYSICAL STATUS OF PRESCHOOL CHILDREN.

TABLE 8.—Specified defects of bony and muscular system, by age and sex; children 2 to 7 years of age given physical examination.

Age and sex.	Total children.		Beaded ribs.		Harrison's groove.		Enlarged epiphyses.		Pigeon breast.		Round shoulders.		Winged scapulae.		Scoliois.		Lordosis.		Knock-knee.		Bowlegs.	
	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.	Num. ber.	Per cent.
Both sexes.....	3,125		53	1.7	103	3.3	452	14.5	57	1.8	16	0.5	194	6.2	300	9.6						
2 years, under 3.....	511	1.8	4	.8	6	.8	5	.6	2	.4	2	.4	21	4.1	54	10.7						
3 years, under 4.....	496	1.1	10	2.0	6	1.2	9	1.8	3	.6	2	.4	23	4.6	43	8.7						
4 years, under 5.....	549	1.7	20	3.6	21	3.8	59	10.7	10	1.8	10	1.8	38	6.9	46	8.4						
5 years, under 6.....	667	1.7	42	6.3	34	5.1	145	21.7	14	2.1	31	4.6	107	16.0	70	10.5						
6 years, under 7.....	692	1.2	50	7.2	66	9.5	187	27.0	19	2.8	31	4.5	24	3.5	52	7.5						
7 years, under 8.....	220	.5	15	6.8	25	11.4	56	25.0	4	1.8	7	3.2	8	3.6	33	15.0						
Boys.....	1,555		38	2.4	62	4.0	238	15.3	27	1.7	10	.6	92	5.9	193	12.4						
2 years, under 3.....	261	.8	13	5.0	2	.8	1	.4	4	1.5	2	.8	1	.4	3	1.1						
3 years, under 4.....	251	1.8	9	3.6	7	2.8	11	4.4	4	1.6	7	2.8	4	1.6	10	3.9						
4 years, under 5.....	274	1.6	18	6.6	23	8.4	25	9.1	6	2.2	10	3.6	63	22.9	14	5.1						
5 years, under 6.....	327	1.9	31	9.5	27	8.2	83	25.4	15	4.5	18	5.5	93	28.7	29	9.1						
6 years, under 7.....	334	.9	33	9.9	45	13.5	97	29.0	15	4.5	21	6.3	28	8.4	19	5.7						
7 years, under 8.....	98		8	8.2	18	18.4	3	3.1	3	3.1	4	4.1	2	2.0	1	1.0						
Girls.....	1,570		15	1.0	41	2.6	214	13.6	30	1.9	6	.4	102	6.5	107	6.8						
2 years, under 3.....	250	.8	7	2.8	2	.8	2	.8	1	.4	1	.4	1	.4	11	4.4						
3 years, under 4.....	245	2.0	7	2.9	2	.8	3	1.2	1	.4	2	.8	2	.8	6	2.4						
4 years, under 5.....	275	1.4	14	5.1	11	4.0	31	11.3	1	.4	11	4.0	31	11.3	1	.4						
5 years, under 6.....	330	1.6	11	3.3	10	3.0	50	15.2	8	2.4	13	3.9	17	5.2	9	2.7						
6 years, under 7.....	348	1.4	17	4.9	21	6.0	61	17.5	9	2.6	10	2.9	11	3.2	3	.9						
7 years, under 8.....	122	.8	7	5.7	7	5.7	28	23.0	1	.8	3	2.5	6	4.9	8	6.5						

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TABLE 9.—Relation of weight to height, by age and sex; children 2 to 7 years of age given physical examination.

Relation of weight to height and sex.	Total children.		2 years, under 3.		3 years, under 4.		4 years, under 5.	
	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.
Both sexes.....	3,125	100.0	511	100.0	496	100.0	549	100.0
Weight for height:								
Average and above.....	1,319	42.2	188	36.8	194	39.1	223	40.6
Below average.....	1,806	57.8	323	63.2	302	60.9	326	59.4
Less than 7 per cent.....	1,180	37.8	172	33.7	184	37.1	222	40.4
7 per cent, less than 10.....	323	10.3	66	12.9	59	11.9	48	8.7
10 per cent and over.....	403	9.7	85	16.6	59	11.9	56	10.2
Boys.....	1,555	100.0	261	100.0	251	100.0	274	100.0
Weight for height:								
Average and above.....	618	39.7	95	36.4	94	37.5	99	36.1
Below average.....	937	60.3	166	63.6	157	62.5	175	63.9
Less than 7 per cent.....	627	40.3	91	34.9	95	37.8	119	43.4
7 per cent, less than 10.....	170	10.9	32	12.3	33	13.1	28	10.2
10 per cent and over.....	140	9.0	43	16.5	29	11.6	28	10.2
Girls.....	1,570	100.0	250	100.0	245	100.0	275	100.0
Weight for height:								
Average and above.....	701	44.6	93	37.2	100	40.8	124	45.1
Below average.....	869	55.4	157	62.8	145	59.2	151	54.9
Less than 7 per cent.....	553	35.2	81	32.4	89	36.3	109	37.5
7 per cent, less than 10.....	153	9.7	34	13.6	26	10.6	20	7.3
10 per cent and over.....	163	10.4	42	16.8	30	12.2	28	10.2
Relation of weight to height and sex.			5 years, under 6.		6 years, under 7.		7 years, under 8.	
			Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.
Both sexes.....			667	100.0	682	100.0	220	100.0
Weight for height:								
Average and above.....			284	42.6	320	46.9	110	50.0
Below average.....			383	57.4	362	53.1	110	50.0
Less than 7 per cent.....			277	41.5	239	35.0	86	39.1
7 per cent, less than 10.....			62	9.3	75	11.0	13	5.9
10 per cent and over.....			44	6.6	48	7.0	11	5.0
Boys.....			337	100.0	334	100.0	98	100.0
Weight for height:								
Average and above.....			135	40.1	147	44.0	48	49.0
Below average.....			202	59.9	187	56.0	50	51.0
Less than 7 per cent.....			152	45.1	132	39.5	38	38.8
7 per cent, less than 10.....			34	10.1	35	10.5	8	8.2
10 per cent and over.....			16	4.7	20	6.0	4	4.1
Girls.....			330	100.0	348	100.0	122	100.0
Weight for height:								
Average and above.....			149	45.2	173	49.7	62	50.8
Below average.....			181	54.8	175	50.3	60	49.2
Less than 7 per cent.....			125	37.9	107	30.7	48	39.3
7 per cent, less than 10.....			28	8.5	40	11.5	5	4.1
10 per cent and over.....			28	8.5	28	8.0	7	5.7

TABLE 10.—*Relation of weight to height, by color and nationality of mother; children 2 to 7 years of age given physical examination.*

Color and nationality of mother.	Total children.	Relation of weight to height.									
		Average and above.		Below average.							
				Total.		Less than 7 per cent.		7 per cent, less than 10.		10 per cent and over.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	3,125	1,319	42.2	1,806	57.8	1,180	37.8	323	10.3	303	9.7
White.....	3,047	1,284	42.1	1,763	57.9	1,150	37.7	317	10.4	296	9.7
Native.....	1,151	466	40.5	685	59.5	439	38.1	132	11.5	114	9.9
Foreign-born.....	1,896	818	43.1	1,078	56.9	711	37.5	185	9.8	182	9.6
Serbo-Croatian.....	321	144	44.9	177	55.1	121	37.7	28	8.7	28	8.7
Slovak.....	313	102	32.6	211	67.4	137	43.8	40	12.8	34	10.9
Polish.....	224	93	41.5	134	59.8	89	39.7	22	9.8	23	10.3
Magyar.....	176	76	43.2	100	56.8	66	37.5	23	13.1	11	6.3
Italian.....	157	89	56.7	68	43.3	52	33.1	7	4.5	9	5.7
German.....	139	58	41.7	81	58.3	49	35.3	11	7.9	21	15.1
Lithuanian.....	83	47	56.6	36	43.4	22	26.5	8	9.6	6	7.2
All other.....	483	212	43.9	271	56.1	175	36.2	46	9.5	50	10.4
Negro.....	71	33	46.5	38	53.5	26	36.6	5	7.0	7	9.9
Not reported.....	7	2	28.6	5	71.4	4	57.1	1	14.3	0	0

¹ Not shown where base is less than 50.TABLE 11.—*Prevalence of specified defects, by deviation from average weight for height; children 2 to 7 years of age given physical examination.*

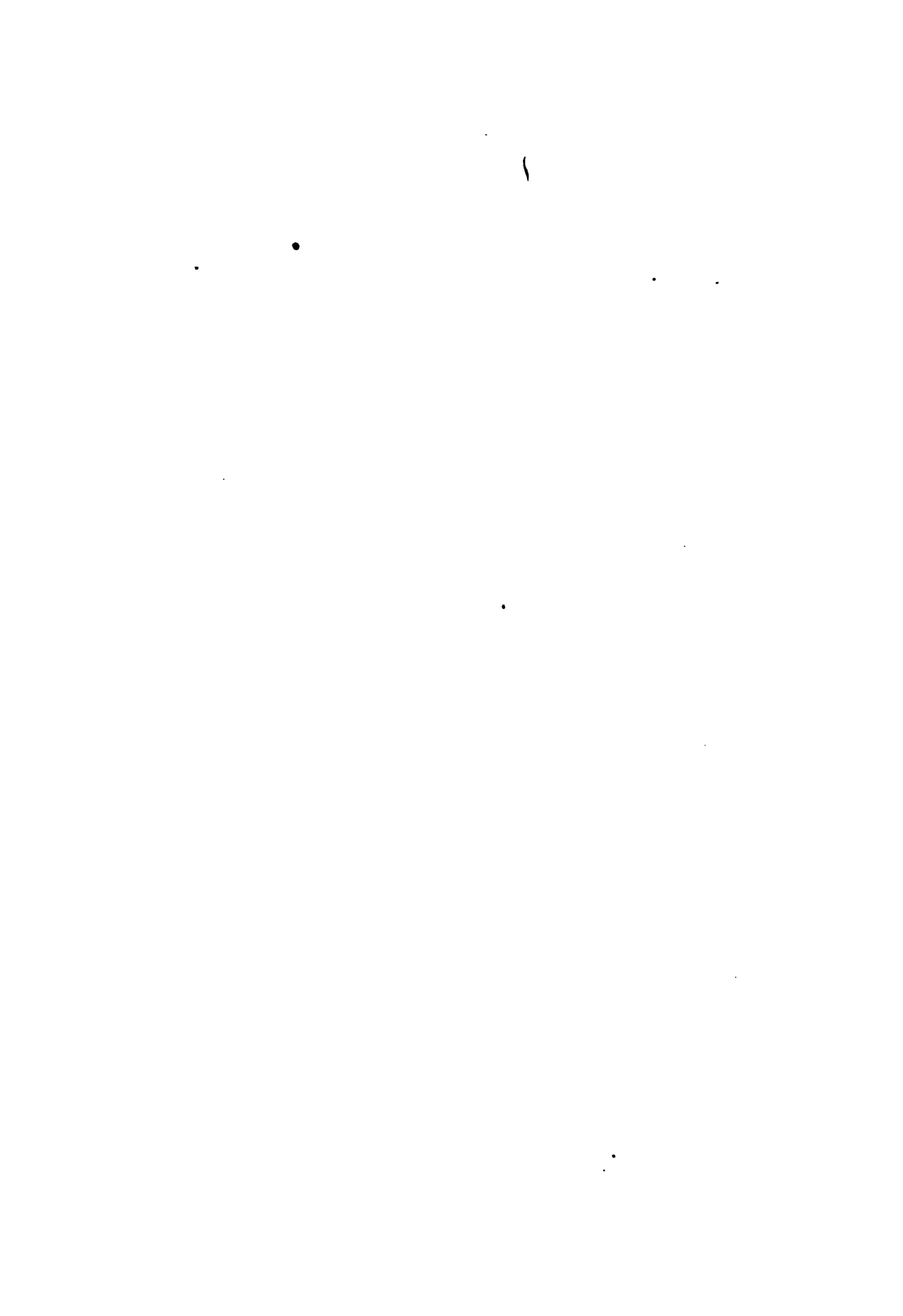
Deviation from average weight for height. ¹	Total children.	With decayed teeth.		With adenoids.		With diseased tonsils.		With postural defects.		With bony defects of rachitic origin.		With anemia.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	3,125	2,021	64.7	1,050	33.6	406	13.0	885	28.3	467	14.9	243	7.8
4½ pounds or more below average.....	84	51	60.7	31	36.9	12	14.3	33	39.3	17	20.2	20	23.8
3½ and 4 pounds below average.....	99	68	68.7	35	35.4	19	19.2	30	30.3	23	23.2	15	15.2
3 pounds below average.....	110	69	62.7	37	33.6	20	18.2	41	37.3	19	17.3	17	15.5
2½ pounds below average.....	126	72	57.1	33	26.2	23	18.3	37	29.4	19	15.1	16	12.7
2 pounds below average.....	177	100	56.5	55	31.1	10	5.6	50	28.2	20	11.3	15	8.5
1½ pounds below average.....	188	126	67.0	56	29.8	22	11.7	59	31.4	32	17.0	21	11.2
1 pound below average.....	255	158	62.0	74	29.0	32	12.5	79	31.0	42	16.5	17	6.7
½ pound below average.....	241	154	63.9	85	35.3	39	16.2	73	30.3	43	17.8	16	6.6
Average.....	270	185	68.5	88	32.6	30	11.1	71	26.3	39	14.4	14	5.2
½ pound above average.....	234	144	61.5	84	35.9	22	9.4	62	26.5	26	11.1	13	5.5
1 pound above average.....	269	160	61.8	93	35.9	32	12.4	70	27.0	40	15.4	18	6.9
1½ pounds above average.....	217	135	62.2	70	32.3	25	11.5	51	23.5	36	16.6	13	6.0
2 pounds above average.....	185	114	61.6	59	31.9	19	10.3	46	24.9	28	15.1	10	5.4
2½ pounds above average.....	146	96	65.8	51	34.9	18	12.3	40	27.4	17	11.6	10	6.8
3 pounds above average.....	119	80	67.2	41	34.5	21	17.6	37	31.1	16	13.4	6	5.0
3½ and 4 pounds above average.....	159	114	71.7	53	33.3	23	14.5	39	24.5	21	13.2	4	2.5
4½ pounds or more above average.....	207	153	73.9	80	43.0	28	13.5	53	25.6	20	9.7	14	6.8
Not classified.....	49	42	85.7	16	32.7	11	22.4	14	28.6	9	18.4	4	8.2

¹ In this table, the average weights for height of the Children's Year series were taken as standard. See *Statures and Weights of Children under Six Years of Age*, Children's Bureau Publication No. 87, p. 29.

TABLE 12.—Annual earnings of chief breadwinner, by color and nativity of mother; children 2 to 7 years of age given physical examination.

Annual earnings of chief breadwinner.	Total children.		Color and nativity of mother.								Not reported. ¹
			White.						Negro.		
	Total.		Native.		Foreign born.						
	Num-ber.	Per cent dis-tribu-tion.	Num-ber.	Per cent dis-tribu-tion.	Num-ber.	Per cent dis-tribu-tion.	Num-ber.	Per cent dis-tribu-tion.	Num-ber.	Per cent dis-tribu-tion.	
Total.....	3,125	100.0	3,047	100.0	1,151	100.0	1,896	100.0	71	100.0	7
Under \$650.....	110	3.5	102	3.3	19	1.7	83	4.4	8	11.3	.....
\$650-\$849.....	240	7.7	229	7.5	34	3.0	195	10.3	11	15.5	.....
\$850-\$1,049.....	412	13.2	396	13.0	69	6.0	327	17.2	15	21.1	1
\$1,050-\$1,249.....	491	15.7	477	15.7	146	12.7	331	17.5	14	19.7	.....
\$1,250-\$1,449.....	456	14.6	448	14.7	154	13.4	294	15.5	8	11.3	.....
\$1,450-\$1,849.....	613	19.6	606	19.9	313	27.2	293	15.5	6	8.5	1
\$1,850-\$2,249.....	262	8.4	259	8.5	151	13.1	108	5.7	1	1.4	2
\$2,250 and over.....	303	9.7	300	9.8	194	16.9	106	5.6	1	1.4	2
No chief breadwinner and no earnings.....	58	1.9	57	1.9	19	1.7	38	2.0	1	1.4	.....
Not reported.....	180	5.8	173	5.7	52	4.5	121	6.4	6	8.5	1

¹ Per cent distribution not shown where base is less than 50.



DIX B. RESULTS OF PHYSICAL EXAMINATIONS OF CHILDREN UNDER TWO YEARS OF AGE.

of material.

At the conferences held in connection with this study, examinations were made of 994 infants, the same standards being observed in the physical examinations and tabulations as were used in the preschool group. Since rather interesting differences in the percentage of defects in the two age groups were found, a brief statement of the results is here appended.

Results in general.

In the entire group of 994 infants, 28.3 per cent were found to have defects; less than half (40.2 per cent) of those under 6 months were without defect. More boys than girls showed defects, 12 per cent of the former were without defect in contrast to 10.2 per cent of the latter.

—Number of defects, by age and sex; children under 2 years of age given physical examination.

Defects, and sex.	Total children.		Under 6 months.		6 months, under 1 year.		1 year, under 1½ years.		1½ years, under 2 years.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Sexes.....	994	100.0	214	100.0	278	100.0	245	100.0	257	100.0
Boys.....	713	71.7	128	59.8	182	65.5	191	78.0	212	82.5
Girls.....	676	68.0	128	59.8	179	64.4	180	73.5	189	73.5
Under 5.....	318	32.0	87	40.7	104	37.4	69	28.2	58	22.6
6 months.....	205	20.6	31	14.5	52	18.7	61	24.9	61	23.7
7 months.....	114	11.5	6	2.8	18	6.5	39	15.9	51	19.8
8 months.....	39	3.9	4	1.9	5	1.8	11	4.5	19	7.4
9 months.....	34	3.4	.....	.....	3	1.1	11	4.5	20	7.8
10 months.....	3	.3	.....	.....	.....	.....	.....	.....	3	1.2
11 months.....	281	28.3	86	40.2	96	34.5	54	22.0	45	17.5
12 months.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13 months.....	524	100.0	113	100.0	146	100.0	128	100.0	137	100.0
14 months.....	461	88.0	96	85.0	127	87.0	115	89.9	123	89.8
15 months.....	435	83.0	96	85.0	125	85.6	106	82.8	108	78.8
16 months.....	188	35.9	61	54.0	65	44.5	35	27.3	27	19.7
17 months.....	137	26.1	26	23.0	41	28.1	36	28.1	34	24.8
18 months.....	81	15.5	6	5.3	14	9.6	28	21.9	33	24.1
19 months.....	29	5.5	3	2.7	5	3.4	7	5.5	14	10.2
20 months.....	24	4.6	.....	.....	2	1.4	9	7.0	13	9.5
21 months.....	2	.4	.....	.....	.....	.....	.....	.....	2	1.5
22 months.....	63	12.0	17	15.0	19	13.0	13	10.2	14	10.2
23 months.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24 months.....	470	100.0	101	100.0	132	100.0	117	100.0	120	100.0
25 months.....	252	53.6	32	31.7	55	41.7	76	65.0	89	74.2
26 months.....	241	51.3	32	31.7	54	40.9	74	63.2	81	67.5
27 months.....	130	27.7	26	25.7	39	29.5	34	29.1	31	25.8
28 months.....	68	14.5	5	5.0	11	8.3	25	21.4	27	22.5
29 months.....	33	7.0	.....	.....	4	3.0	11	9.4	18	15.0
30 months.....	10	2.1	1	1.0	.....	.....	4	3.4	5	4.2
31 months.....	10	2.1	.....	.....	1	.8	2	1.7	7	5.8
32 months.....	1	.2	.....	.....	.....	.....	.....	.....	1	.8
33 months.....	218	46.4	69	68.3	77	58.3	41	35.0	31	25.8

An analysis of the kinds of defects as given in Table II shows a fairly even distribution as to sex except in defects of the genitalia where a marked difference between boys and girls occurs.

TABLE II.—Prevalence of disease or defects, by sex; children under 2 years of age physical examination.

Disease or defect.	Both sexes.		Boys.		Girls
	Number.	Per cent.	Number.	Per cent.	Number.
Total	994	100.0	524	100.0	470
Without defect	241	28.3	63	12.0	215
With disease or defect	713	71.7	461	88.0	285
General:					
Underweight (10 per cent and over)	262	28.4	152	29.0	110
Anemia	22	2.2	13	2.5	9
Head	172	17.3	89	17.0	78
Abnormal shape	25	2.5	16	3.1	9
Open fontanel (children 1½ to 2 years of age)	49	4.9	26	4.8	23
Eyes:					
Diseases and defects other than of vision	23	2.3	14	2.7	9
Conjunctivitis	3	.3	3	.6	
Blepharitis	2	.2	1	.2	1
Stye	1	.1			1
Prosis	2	.2	2	.4	
Corneal opacities	2	.2			2
Strabismus	13	1.3	8	1.5	5
Blindness (one eye)	1	.1			1
Ears	8	.8	5	1.0	3
Acute otorrhoea	2	.2			2
Chronic otorrhoea	6	.6	5	1.0	1
Mouth	26	2.6	15	2.9	11
Decayed teeth	16	1.6	10	1.9	6
Malocclusion	12	1.2	5	1.0	7
Naso-pharynx	225	22.6	129	24.6	96
Defective tonsils	182	18.3	101	19.3	81
Adenoids (definite)	22	2.2	17	3.2	5
Adenoids (suspected)	31	3.1	17	3.2	14
Glands:					
Enlarged or greatly enlarged	38	3.8	23	4.4	15
Submaxillary	16	1.6	9	1.7	7
Cervical	22	2.2	14	2.7	8
Axillary	1	.1		.2	
Inguinal	5	.5	2	.4	3
Heart	3	.3	2	.4	1
Heart disease	1	.1	1	.2	
Questionable heart disease	2	.2	1	.2	1
Lungs	9	.9	7	1.3	2
Lung disease	4	.4	4	.8	
Questionable lung disease	5	.5	3	.6	2
Skin	26	2.6	14	2.7	12
Eczema	14	1.4	7	1.3	7
Impetigo	2	.2	2	.4	
Infected sores	10	1.0	5	1.0	5
Ringworm	1	.1	1	.2	
Scars	2	.2	1	.2	1
Abdomen	150	15.1	71	13.5	77
Distended abdomen	121	12.2	56	10.7	64
Enlarged liver	1	.1	1	.2	
Hernia	34	3.8	19	3.6	15
Bony and muscular system	135	13.6	81	15.5	54
Beaded ribs	11	1.1	7	1.3	4
Pigeon breast	2	.2	2	.4	
Harrison's groove	10	1.0	8	1.5	2
Enlarged epiphyses	8	.8	5	1.0	3
Round shoulders	3	.3	2	.4	1
Winged scapulae	1	.1	1	.2	
Lordosis	4	.4	3	.6	1
Knock-knee	1	.1	1	.2	
Bowlegs	121	12.2	72	13.7	46
Clubfeet	2	.2	1	.2	1
Arthritis	2	.2	2	.4	
Paralysis	1	.1	1	.2	
Mentality	7	.7	4	.8	3
Defect apparent	2	.2	2	.4	
Defect suspected	5	.5	2	.4	3
Genitalia: Boys			374	71.4	
Prepuce defects			371	70.8	
Defects other than those of prepuce			7	1.3	
Genitalia: Girls:					
Vaginal discharge					

respective of age, the average number of defects of all infants examined was 2.2 for boys and 1.9 for girls.

The incidence of defects according to age increased steadily in both sexes from 6 months to 2 years, but the rate of increase was much higher in girls. For instance, 85 per cent of the boys under 6 months of age had defects, in contrast to 31.7 per cent of the girls; while at 2 years of age the defects had increased to 89.8 per cent for boys and 74.2 per cent for girls respectively.

Height and weight.

The average heights and weights of all white infants are recorded 6 months in Text Table IV. As in the case of the preschool child, these averages are somewhat lower throughout than those used as standards in the examinations.

Nutrition.

More than a quarter (26.4 per cent) of all children under 2 years of age were more than 10 per cent below average weight for height, in contrast with 9.7 per cent of the children 2 to 7 years of age. This marked difference, in the two homogeneous groups classified by age, rather suggests that a range greater than 10 per cent below average weight for height would be a fairer standard during infancy. The age group, 6 months to 1 year, showed the highest per cent graded "excellent" as to nutrition, and the higher age group, over 1½ years, had the highest per cent (35.9) underweight. In fact, the proportion of children 10 per cent or more below the average weight for height increased steadily with age up to 18 months; but in the 6 month period following, a decidedly better condition was apparent, only 21 per cent of these children being 10 per cent or more underweight.

TABLE III.—Grade of nutrition, by age and sex; children under 2 years of age given physical examination.

Age and sex.	Total children.	Grade of nutrition.							
		Excellent		Good.		Poor.		Very poor.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Both sexes.....	994	94	9.5	638	64.2	242	24.3	20	2.0
Under 6 months.....	214	10	4.7	159	74.3	38	17.8	7	3.3
6 months, under 1 year.....	278	39	14.0	164	59.0	72	25.9	3	1.1
1 year, under 1½ years.....	245	20	8.2	137	55.9	85	34.7	3	1.2
1½ years, under 2 years.....	257	25	9.7	178	69.3	47	18.3	7	2.7
Boys.....	524	61	11.6	311	59.4	141	26.9	11	2.1
Under 6 months.....	113	6	5.3	79	69.9	24	21.2	4	3.5
6 months, under 1 year.....	146	28	19.2	75	51.4	41	28.1	2	1.4
1 year, under 1½ years.....	128	12	9.4	65	50.8	50	39.1	1	.8
1½ years, under 2 years.....	137	15	10.9	92	67.2	26	19.0	4	2.9
Girls.....	470	33	7.0	327	69.6	101	21.5	9	1.9
Under 6 months.....	101	4	4.0	80	79.2	14	13.9	3	3.0
6 months, under 1 year.....	132	11	8.3	89	67.4	31	23.5	1	.8
1 year, under 1½ years.....	117	8	6.8	72	61.5	35	29.9	2	1.7
1½ years, under 2 years.....	120	10	8.3	86	71.7	21	17.5	3	2.5

A table showing the amount of deviation from average weight for height in children under 2 years of age is given for purposes of comparison with the preschool group.

TABLE IV.—*Deviation from average weight for height, by age and sex; children under 2 years of age given physical examination.*

Deviation from average weight for height.	Total children.		Under 6 months.		6 months, less than 1 year.		1 year, less than 1½ years.		1½ years, less than 2 years.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes	994	100.0	214	100.0	278	100.0	245	100.0	257	100.0
Average and above.....	307	30.9	96	44.9	96	30.9	57	23.3	66	26.5
Below average.....	687	69.1	118	55.1	192	69.1	188	76.7	189	73.5
Less than 7 per cent.....	279	28.1	49	22.9	73	26.3	63	25.7	94	36.6
7 per cent, less than 10.....	146	14.7	24	11.2	44	15.8	37	15.1	41	16.0
10 per cent and over.....	262	26.4	45	21.0	75	27.0	88	35.9	54	21.0
Boys.....	524	100.0	113	100.0	146	100.0	128	100.0	137	100.0
Average and above.....	165	31.5	42	37.2	51	34.9	28	21.9	44	32.1
Below average.....	359	68.5	71	62.8	95	65.1	100	78.1	93	67.9
Less than 7 per cent.....	139	26.5	29	25.7	29	19.9	34	26.6	47	34.3
7 per cent, less than 10.....	68	13.0	14	12.4	23	15.8	15	11.7	16	11.7
10 per cent and over.....	152	29.0	28	24.8	43	29.5	51	39.8	30	21.9
Girls.....	470	100.0	101	100.0	132	100.0	117	100.0	120	100.0
Average and above.....	142	30.2	54	53.5	35	26.5	29	24.8	24	20.0
Below average.....	328	69.8	47	46.5	97	73.5	88	75.2	96	80.0
Less than 7 per cent.....	140	29.8	20	19.8	44	33.3	29	24.8	47	39.2
7 per cent, less than 10.....	78	16.6	10	9.9	21	15.9	22	18.8	25	20.8
10 per cent and over.....	110	23.4	17	16.8	32	24.2	37	31.6	24	20.0

Anemia.

Of the children under 2 years of age, only 2.2 per cent showed sufficient pallor to be considered anemic. Pallor increased with age, as did the number of defects, and was more common in boys than in girls. The percentage was also higher in underweight children.

Vaccination.

Only 24, or 2.4 per cent, of the children under 2 years of age had been vaccinated.

Head.

Measurements showed only 13 heads of abnormal size, 7 small and 6 large, in the 994 children of this age group, a percentage of 1.3. Special attention was given to the palpation of fontanels. Four cases of completely closed fontanels were noted in infants under 6 months, and 15 in the period 6 months to 1 year. There were 49 cases of open fontanel in infants between 18 months and 2 years of age.

Eyes.

Obviously, it was impossible to obtain data regarding vision in this group; but 23 infants, or 2.3 per cent, showed eye defects, the pro-

portion steadily increasing with age from 0.9 per cent among infants under 6 months to 3.1 per cent among those 1½ to 2 years of age.

Ears.

Ear defects in this group of infants were confined to 8 cases of otorrhea.

Mouth.

A careful examination of the mouths revealed little of significance beyond the fact that only 5 infants, or 2.3 per cent of those under 6 months of age, had one or more teeth, while 11.2 per cent had completed teething under 2 years of age. Sixteen infants (2.4 per cent) 18 months of age or over had decayed teeth, and 12 cases (1.2 per cent) of malocclusion were found.

Nasopharynx.

The most common defects of infancy, as of the preschool age, were those of the nasopharynx, although these defects were about one-third as prevalent in infancy as in the preschool period. Boys slightly predominated in all types of nasopharyngeal defects, showing 24.6 per cent in contrast to 20.4 per cent among the girls. The incidence of nasopharyngeal defects among infants under 6 months of age was noticeably slight, but a marked and gradual increase in the number of defects with age was found.

TABLE V.—*Nasopharyngeal defects, by age and sex; children under 2 years of age given physical examination.*

Age and sex.	Total children.	With mouth breathing.		With high-arch palate.		With defective tonsils.		With adenoids.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Both sexes.....	994	55	5.5	30	3.0	182	18.3	53	5.3
Under 6 months.....	214			1	.5	10	4.7		
6 months, under 1 year.....	278	10	3.6	6	2.2	30	10.8	11	4.0
1 year, under 1½ years.....	245	19	7.8	11	4.5	60	24.5	17	6.9
1½ years, under 2 years.....	257	26	10.1	12	4.7	82	31.9	25	9.7
Boys.....	524	34	6.5	16	3.1	101	19.3	34	6.5
Under 6 months.....	113			1	.9	5	4.4		
6 months, under 1 year.....	146	7	4.8	4	2.7	16	11.0	8	5.5
1 year, under 1½ years.....	128	11	8.6	6	4.7	32	25.0	11	8.6
1½ years, under 2 years.....	137	16	11.7	5	3.6	48	35.0	15	10.9
Girls.....	470	21	4.5	14	3.0	81	17.2	19	4.0
Under 6 months.....	101					5	5.0		
6 months, under 1 year.....	132	3	2.3	2	1.5	14	10.6	3	2.3
1 year, under 1½ years.....	117	8	6.8	5	4.3	28	23.9	6	5.1
1½ years, under 2 years.....	120	10	8.3	7	5.8	34	28.3	10	8.3

Mouth breathing increased from 3.6 per cent in the 6 months to 1 year period to 10.1 per cent in the 18 months to 2 years period.

High-arch palate showed a gradual development after 6 months of age, the majority of cases being pronounced enough for recording only after 1 year of age.

Tonsils.—Enlargement of tonsils increased with age from 4.7 per cent under 6 months to 31.9 per cent from 18 months to 2 years. To what extent the so-recorded "enlarged tonsils" may have been a normal hyperplasia of lymphoid tissue needs to be verified by further observations; but only 1 infant in the group was considered to have greatly enlarged tonsils and only 1 had diseased tonsils.

Removal of tonsils was advised in only 4 cases of the 182 defective, 3 of these being accompanied by adenoids.

Adenoids.—The prevalence of adenoids increased with age, even during the period of infancy. Adenoids were definitely diagnosed in 22 cases (2.2 per cent), and symptoms such as mouth breathing and high-arch palate led to a diagnosis of "suspected or probable" adenoids in 31 cases (3.1 per cent); thus the number of infants having definite or probable adenoids amounted to 5.3 per cent.

Removal of adenoids was recommended in a total of 9 cases, 6 being combined with defective tonsils. Only 1 case of adenoids requiring removal was found in a child under 1 year of age.

Glands.

In 66 per cent of the entire group of infants the glands were not even "palpable," and only 3.8 per cent had actually "enlarged" glands.

TABLE VI.—Condition of tonsils, by age; children under 2 years of age given physical examination.

Condition of tonsils.	Total children.		Under 6 months.		6 months, under 1 year.		1 year, under 1½ years.		1½ years, under 2 years.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	994	100.0	214	100.0	278	100.0	245	100.0	257	100.0
Normal.....	811	81.6	204	95.3	248	89.2	185	76.5	174	67.7
Removed, not defective.....	1	.1							1	.4
Defective.....	182	18.3	10	4.7	30	10.8	60	24.5	82	31.9
Enlarged only.....	180	18.1	10	4.7	29	10.4	60	24.5	81	31.5
Greatly enlarged only.....	1	.1							1	.4
Diseased and enlarged.....	1	.1			1	.4				

That the size of the glands gradually but markedly increased with age is shown by the percentage "palpable," as follows: 7.9 per cent under 6 months, 25.5 per cent from 6 months to a year, 38.4 per cent from 1 year to 18 months, and 45.9 per cent from 18 months to 2 years.

TABLE VII.—Condition of glands, by age and sex; children under 2 years of age given physical examination.

Condition of glands, and sex.	Total children.		Under 6 months.		6 months, under 1 year.		1 year, under 1½ years.		1½ years, under 2 years.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Both sexes.....	994	100.0	214	100.0	278	100.0	245	100.0	257	100.0
Glands:										
Normal.....	656	66.0	195	91.1	206	74.1	141	57.6	114	44.4
Palpable.....	300	30.2	17	7.9	71	25.5	94	38.4	118	45.9
Enlarged and greatly enlarged.....	38	3.8	2	.9	1	.4	10	4.1	25	9.7
With associated infection.....	21	2.1	1	.5			2	.8	18	7.0
Without associated infection.....	17	1.7	1	.5	1	.4	8	3.3	7	2.7
Boys.....	524	100.0	113	100.0	146	100.0	128	100.0	137	100.0
Glands:										
Normal.....	325	62.0	101	89.4	104	71.2	67	52.3	53	38.7
Palpable.....	176	33.6	11	9.7	41	28.1	55	43.0	69	50.4
Enlarged and greatly enlarged.....	23	4.4	1	.9	1	.7	6	4.7	15	10.9
With associated infection.....	12	2.3					1	.8	11	8.0
Without associated infection.....	11	2.1	1	.9	1	.7	5	3.9	4	2.9
Girls.....	470	100.0	101	100.0	132	100.0	117	100.0	120	100.0
Glands:										
Normal.....	331	70.4	94	93.1	102	77.3	74	63.2	61	50.8
Palpable.....	124	26.4	6	5.9	30	22.7	39	33.3	49	40.8
Enlarged and greatly enlarged.....	15	3.2	1	1.0			4	3.4	10	8.3
With associated infection.....	9	1.9	1	1.0			1	.9	7	5.8
Without associated infection.....	6	1.3					3	2.6	3	2.5

Heart.

Only one case of positive organic cardiac disease and two questionable cases were found in the total of 994 infants.

Lungs.

The slight incidence of respiratory disease in this group of infants is interesting, as shown by only four positive diagnoses and five questionable cases.

Skin.

A comparatively small percentage of infants showed any abnormal skin condition—only 26, or 2.6 per cent.

Abdomen.

Distended abdomen was found in 121 cases, or 12.2 per cent, this condition being slightly more prevalent among girls.

The presence of hernia was noted in 3.8 per cent of the group. In both sex groups umbilical herniæ predominated. Inguinal hernia was observed in 7 cases, of which 6 were boys. The largest number of herniæ by age was found in the 18 months to 2 years groups.

Enlarged liver occurred in the case of one boy.

Bony and muscular system.

Positive signs¹ upon which definite diagnoses of rickets were based were found in 22 cases (2.2 per cent). Fifty-three additional cases having one or more suggestive signs were recorded "probably rachitic."² No cases were noted in the group under 6 months of age; 7 of the children classified as rachitic were between 6 months and 1 year, 9 were between 1 year and 1½ years, and 59 (78.7 per cent of all those with rickets) were over 18 months.

Of the rachitic children 12.1 per cent had defective tonsils, as compared with 6.6 per cent of those showing no evidence of rickets.

TABLE VIII.—*Rickets, by age and sex; children under 2 years of age given physical examination.*

Age and sex.	Total children.	With rickets.		With probable rickets.		Without rickets.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Both sexes.....	994	22	2.2	53	5.3	919	92.5
Under 6 months.....	214					214	100.0
6 months, under 1 year.....	278	4	1.4	3	1.1	271	97.5
1 year, under 1½ years.....	245	6	2.4	3	1.2	236	96.3
1½ years, under 2 years.....	257	12	4.7	47	18.3	196	77.0
Boys.....	524	14	2.7	27	5.2	483	92.2
Under 6 months.....	113					113	100.0
6 months, under 1 year.....	146	3	2.1	2	1.4	141	96.6
1 year, under 1½ years.....	128	4	3.1	1	.8	123	96.1
1½ years, under 2 years.....	157	7	5.1	24	17.5	106	77.4
Girls.....	470	8	1.7	26	5.5	436	92.8
Under 6 months.....	101					101	100.0
6 months, under 1 year.....	133	1	.8	1	.8	130	98.5
1 year, under 1½ years.....	117	2	1.7	2	1.7	113	96.6
1½ years, under 2 years.....	130	5	4.2	22	19.2	92	78.7

TABLE IX.—*Rickets, by condition of tonsils; children under 2 years of age given physical examination.*

Condition of tonsils.	Total children.	With rickets.		With probable rickets.		Without rickets.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	994	22	2.2	53	5.3	919	92.5
Normal.....	811	16	2.0	37	4.6	758	93.5
Removed, not defective.....	1					1	
Defective.....	182	6	3.3	16	8.8	160	87.9
Enlarged only.....	180	6	3.3	16	8.9	169	87.8
Greatly enlarged only.....	1					1	
Diseased and enlarged.....	1					1	

¹ Not shown where base is less than 50.

Of the rachitic children 10.7 per cent showed "enlarged" glands, 38.7 per cent "palpable" glands, 50.7 per cent nonpalpable glands, as compared with 3.3 per cent, 29.5 per cent, and 67.2 per cent, respectively, of the nonrachitic children.

¹ For signs, see page 56.

² See page 58.

TABLE X.—Condition of glands, by presence of rickets; children under 2 years of age given physical examination.

Condition of glands.	Total children.		With rickets or probable rickets.		With rickets.	With probable rickets.	Without rickets.	
	Number.	Per cent distribution.	Number.	Per cent distribution.			Number.	Per cent distribution.
Total.....	994	100.0	75	100.0	22	53	919	100.0
Normal.....	656	66.0	38	50.7	8	30	618	67.2
Palpable.....	300	30.2	29	38.7	9	20	271	29.5
Enlarged and greatly enlarged.....	38	3.8	8	10.7	5	3	30	3.3
With associated infection.....	21	2.1	2	2.7	.....	.....	19	2.1
Without associated infection.....	17	1.7	6	8.0	3	3	11	1.2

Bowlegs were more common among the boys than among the girls, 13.7 of the boys and 10.4 per cent of the girls being thus deformed. All other rachitic signs were also more noticeable in the boys than in the girls.

Arch measurements.

Arch measurements were taken on 552 infants and the median height was found to be the same, $\frac{1}{2}$ inch, up to 18 months, but increased to $\frac{3}{4}$ inch in infants from 18 months to 2 years.

Mental condition.

Two cases of apparent and five cases of suspected mental defectives were noted during the course of the study.

Genitalia.

A very large per cent of defects of genitalia, chiefly contracted or adherent prepuce, was found among boys—71.4.

A summary of defects found in children under 2 years of age, as compared with those found in the preschool group, is here given.

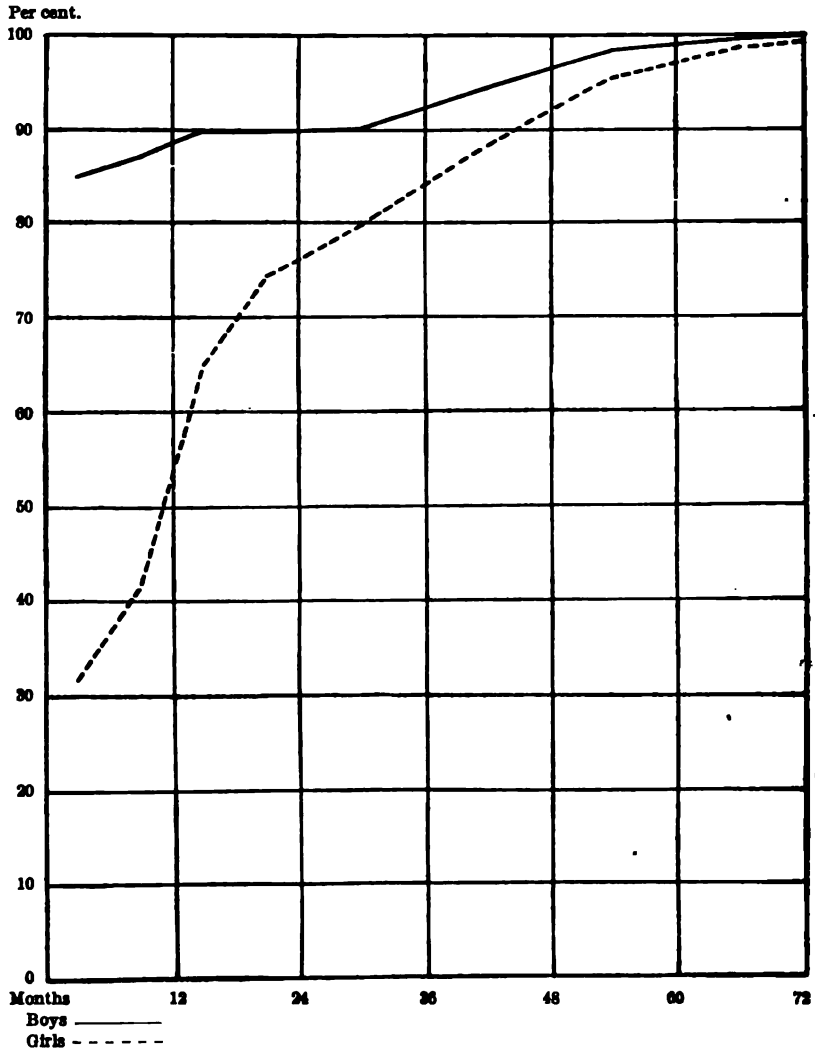
TABLE XI.—Comparison of the prevalence of defects in children under 2 years of age and children 2 to 7 years of age given physical examination.

Summary of defects. ¹	Children under 2 years of age.		Children 2 to 7 years of age.	
	Number.	Per cent.	Number.	Per cent.
Total.....	994	100.0	3,125	100.0
Underweight (10 per cent and over).....	262	26.4	303	9.7
Anemia.....	22	2.2	243	7.8
Head defects.....	172	17.3	163	5.2
Eye diseases and defects other than of vision.....	23	2.3	245	7.8
Ear defects other than of hearing.....	8	.8	25	.8
Mouth defects.....	26	2.6	2,091	66.9
Naso-pharyngeal defects.....	225	22.6	2,157	69.0
Enlarged glands.....	38	3.8	908	29.1
Heart defects.....	3	.3	99	3.2
Lung defects.....	9	.9	32	1.0
Abnormal skin condition.....	26	2.6	318	10.2
Abdominal defects.....	150	15.1	464	14.8
Bony and muscular defects.....	135	13.6	1,308	41.9

¹ For specific defects see Text Table II, p. 29, and Appendix Table II, p. 76.

PHYSICAL STATUS OF PRESCHOOL CHILDREN.

CHART V. Per cent of children having one or more defects, from birth to 6 years of age.



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U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

CHILDREN'S BUREAU

GRACE ABBOTT, Chief

INFANT MORTALITY

RESULTS OF A FIELD STUDY IN GARY, IND.,
BASED ON BIRTHS IN ONE YEAR

By

ELIZABETH HUGHES

Ⓕ

Bureau Publication No. 112



WASHINGTON
GOVERNMENT PRINTING OFFICE
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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, May 13, 1922.

SIR: There is transmitted herewith a report on infant mortality in the city of Gary, Ind., the ninth in the bureau's series of reports on infant mortality.

This study is part of a general investigation of the welfare of infants and children of preschool age made while Miss Julia C. Lathrop was chief of the Children's Bureau. Separate reports will present the findings with reference to the health of the children of preschool age, the conditions under which they live, and the general care they were receiving.

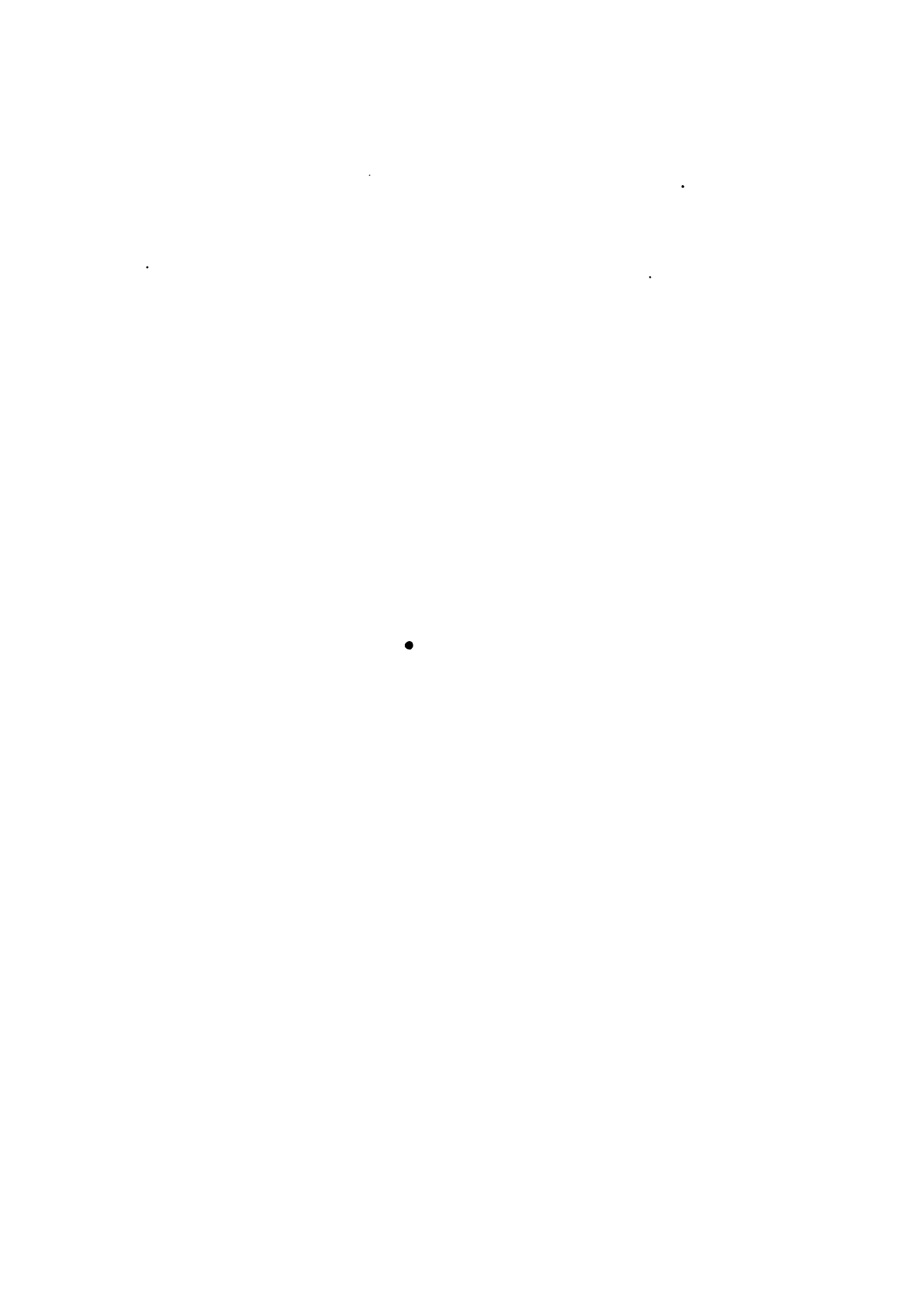
The investigation was directly in charge of Estelle B. Hunter; Dr. Robert M. Woodbury was responsible for the interpretation of the statistical findings, and has written the appendix on Method of Procedure; Elizabeth Hughes, who has written the main body of the report, was the supervisor of the local field work.

The bureau desires to acknowledge with thanks the assistance of its statistical committee—Professors Walter F. Willcox, Irving Fisher, Thomas S. Adams, Robert E. Chaddock, J. W. Glover, and Edith Abbott—in the planning of the inquiry; and the cooperation on the part of the mothers, public officials, and local organizations of Gary which made the carrying out of the plan possible.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

HON. JAMES J. DAVIS,
Secretary of Labor.



INFANT MORTALITY, GARY.

INTRODUCTION.

SELECTION OF GARY, IND.

In 1913 the Children's Bureau began the first of its field inquiries on the subject of infant mortality and the social and economic conditions surrounding infant life in typical American cities.¹ This report presents the findings of the ninth unit in the series. The studies preceding this were made during normal times of peace; the cases considered in this report, though born in 1916 before the United States became an active participant in the World War, completed their first year, or whatever part of it they survived, in a community which was devoting much of its energy toward furthering war-time production of steel.

In 1906 there appeared upon the southern shore of Lake Michigan gigantic mills of the steel corporation and the nucleus of the town of Gary in which the men employed at the mills were to live. An isolated waste of shifting sand dunes and marshes in 1906, by 1910 the population was 16,802.² In 1917 the population was estimated by the Bureau of the Census at 56,000,³ or practically the same as that recorded in the census of 1920, 55,378.⁴ The city is young, rapidly growing, and progressive. Ever since its inception, the city and its methods of meeting civic responsibilities have continued to hold the respect of the public. Industrially, Gary is unusually homogeneous; the steel industry overshadows all other activities. In point of number of nationalities represented, its citizenship is exceedingly diverse. The foreign born constitute over one-half the entire population. The study of infant mortality under these conditions is therefore of especial interest in comparison with cities previously studied by the bureau.

In spite of Gary's rapid growth and progressive spirit the city has experienced a high rate of infant mortality.⁵ In 1917, for cities in the

¹ Between 1913 and 1918 studies were made in Johnstown, Pa.; Manchester, N. H.; Brockton, Mass.; Detroit, Mich.; New Bedford, Mass.; Waterbury, Conn.; Akron, Ohio; and Baltimore, Md.

² Twelfth Census of the United States, 1910, Vol. II, Population, p. 568.

³ Bureau of the Census, Birth Statistics for the Birth-Registration Area of the United States, 1917,

⁴ Twelfth Census of the United States, 1920, Vol. I, Population, p. 83.

⁵ Infant mortality rate is the number of deaths under 1 year of age per 1,000 live births.

birth-registration area,⁶ the infant mortality rate was 100,⁷ while Gary's rate for the same period was 142.⁸

METHOD.

As in former studies of infant mortality the Gary study is based upon births that occurred in the city during a selected year, 1916, and upon the deaths under 1 year of age among this group of children. The year 1916 was chosen because by January 1, 1918, when the study was begun, all the children born in 1916 would have completed a full year of life if they had not died before reaching their first birthdays.

Three principal sources of information were used. The first was the birth and death records of infants born in Gary in 1916. The names, addresses, and facts about the parents and the children were transcribed to schedules to be used in home interviews. A second source of information was a house-to-house canvass of the city which was made prior to the interviews in the homes. In view of the fact that in 1916 Indiana had not been admitted to the birth-registration area, such a census was necessary in order to supplement the list of registered births. It yielded, furthermore, up-to-date addresses for the parents of children born in 1916 and also added a considerable number of new names to the list of births in the selected year. Finally the most important source of information was the home interviews. The mothers of children born in Gary in 1916 were interviewed by the women agents of the bureau, and information was secured in regard to infant feeding during the first year of life, the mother's maternity history, the mother's employment history, and the family income, and housing conditions.

Study of the registration records of Gary showed 1,499^{8a} live births and 68 stillbirths that occurred in the city during 1916.

The house-to-house canvass of the city disclosed 183 unregistered live births and 3 unregistered stillbirths, making the total live births, both registered and unregistered, 1,682; the total stillbirths, 71; and the total number of births, both live and still, 1,753.

As in other studies of infant mortality, not all the births known to have occurred in the city during the period selected could be used in the detailed study.

⁶ In the birth-registration area are included only States in which, in the judgment of the Bureau of the Census, at least 90 per cent of the births are registered. In 1917 the birth-registration area comprised: Connecticut, District of Columbia, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, and Wisconsin. U. S. Bureau of the Census, *Birth Statistics for the Birth-registration area of the United States, 1917*, p. 7.

⁷ *Ibid.*, p. 23.

⁸ *Ibid.*, p. 24, Table I.

^{8a} Includes 44 registered only as deaths.

For 290 infants, the information called for on the schedule could not be obtained because the families into which these children were born had moved away from the city before the date of the canvass. Twenty babies were born in Gary to mothers who resided outside the city but had come to Gary hospitals for confinement. In 40 cases the families could not be located. In 2 cases the data secured seemed too incomplete and unreliable to be included. Four stillbirths of less than seven months' gestation were excluded in order to conform to the definition of stillbirth adopted in all the bureau studies.⁹ Four births out of wedlock were excluded on the ground that the conditions surrounding such births are not the same as in normal families.

Deduction of exclusions from the total number of births for the period, 1,753, leaves as a basis for study 1,353 live births and 40 stillbirths (of seven or more months' gestation). This number includes those born during the calendar year 1916 to married mothers in families which lived in Gary during the year following the birth, and which were living in Gary at the time of the canvass.^{9a}

Before the canvass started in February, 1918, residents of Gary had been made familiar with the character and plan of the proposed inquiry through the newspapers, the schools, and the pulpit. Constant and intelligent cooperation on the part of the city, its officials, its organizations, institutions, and citizens attended every step of the inquiry. Individual mothers gave most generously of their time. Of all the mothers interviewed, none refused to answer the questions upon which this report is based. This widespread civic interest and ready individual contribution to a study of infant and child life in the community are unmistakable evidences of the high esteem in which the child and his welfare are held in Gary.

⁹ A stillbirth, as defined by the Children's Bureau, is a dead-born issue resulting from seven or more months' gestation. If the period of gestation was reported as less than seven months, the birth, even though registered as a stillbirth, was classed as a miscarriage and, as such, excluded from the study.

^{9a} For a more complete discussion of the exclusions, see Appendix, p. 85-89.

INFANT MORTALITY RATE.

Among the 1,353 infants born alive in Gary in 1916 who were included in the detailed study, 169 deaths under 1 year of age occurred, giving an infant mortality rate of 124.9.¹⁰

CAUSE OF DEATH.

The causes of these 169 deaths as stated on the death certificates show the diseases which were directly responsible for this loss of infant life. They suggest, furthermore, the economic and social factors responsible for the relative importance of the different diseases as causes of death in infancy. Such environmental influences as hot weather, unsupervised artificial feeding, poor sanitation, lack of medical and hospital care, improper housing, poverty, and ignorance are important factors governing the incidence of disease.

The group of diseases to which the largest number of infant deaths among babies born in Gary in 1916 was due, comprised the gastric and intestinal diseases.¹¹ To these diseases were attributed 68 of the total 169 deaths or 40.2 per cent. Next in rank were the causes of death connected with early infancy—premature birth, congenital debility, and injuries at birth—which were responsible for 34 deaths, or one-fifth the entire number. Respiratory diseases were third in order of importance and the cause of 27 deaths, or 16 per cent of the total. Other communicable diseases accounted for 15 deaths (8.9 per cent); malformations, for 11 (6.5 per cent); and all other causes, for 14 (8.3 per cent).

TABLE I.—*Infant mortality rates, by cause of death; live births in Gary in 1916.*

Cause of death. ^a	Infant deaths.		
	Number.	Per cent distribution.	Infant mortality rate.
All causes.....	169	100.0	124.9
Gastric and intestinal diseases.....	68	40.2	50.3
Respiratory diseases.....	27	15.9	19.9
Malformations.....	11	6.5	8.1
Early infancy.....	34	20.1	25.1
Epidemic and other communicable diseases.....	15	8.9	11.1
All other causes.....	14	8.3	10.4

^a For classification according to detailed International List, see General Table 2, p. 93.

¹⁰ For method of computing infant mortality rate, see p. 85.

¹¹ The classification of causes of death used here is that used by the U. S. Bureau of the Census (see Mortality Statistics, 1916, p. 483), and comprises the diseases most important in the first 12 months of life. The term "gastric and intestinal diseases" includes only the diseases of this type which are most important among infants; i. e., diseases of the stomach, diarrhea, and enteritis. It does not encompass all "diseases of the digestive system" as classified under this heading according to the detailed International List. So, too, "respiratory diseases" includes only those respiratory diseases most important among infants: i. e., acute bronchitis, broncho-pneumonia, and pneumonia. "Communicable diseases," similarly, is limited to those of this group which are most important among infants. See General Table 2, p. 93.

GASTRIC AND INTESTINAL DISEASES.

The infant mortality rate from gastric and intestinal diseases in Gary was 50.3, or almost exactly double that for the same group of diseases in the birth-registration area, 25.4, in 1916. In both birth- and death-registration areas the gastric and intestinal diseases occupied second place among the causes of death of babies. In Gary they held first rank. Gary's rate from this group of diseases alone was practically equivalent to New Zealand's rate, 51, from all causes for the same year.

An examination of the distribution of the 68 deaths in Gary from gastric and intestinal diseases, according to the calendar month in which death occurred, shows the mortality to have been greatest in July, August, and September, though no month was free of deaths from this cause. In these three months alone 41 of the 68 deaths took place, the highest number for any one month being reached in August (Chart I). Since deaths under 1 year of age of infants born in 1916 might have occurred in either 1916 or 1917, the mortality in this group from gastric and intestinal diseases may have been influenced by the temperature conditions of the summer months of these two years. Of the 50 babies dying in 1916 from gastric and intestinal diseases 32 died in these months; 9 of the 18 deaths in 1917 from the same causes occurred in the period, July through September. The concentration of deaths in these hot summer months shows the effect of hot weather in increasing the mortality from gastric and intestinal diseases.

The summer of 1916 showed for the vicinity of Gary unusually high temperatures, which were exceptionally prolonged. These, together with a lowered rainfall, were apparently favorable to the production of a high infant death rate from diarrhea and enteritis. On 25¹² days in July, August, and September the temperature was 90° or over. Though 1917 did not equal 1916 in extremes of heat and deficiency of rainfall, it nevertheless produced 12 days when the temperature was 90° or over.

The accompanying tabular statement shows means of temperature and rainfall for 1916 and 1917.¹³

¹² Figures are taken for the nearest station of the Weather Bureau, at Whiting, Ind., and may be considered representative for Gary also.

¹³ U. S. Bureau of the Census, Mortality Statistics, 1917, p. 58: Death rate from diarrhea and enteritis under 2 years of age per 100,000 population. In Gary, Ind., in 1911 the death rate was 380.9; in 1915, 410.7; in 1916, 809.4; in 1917, 164.3. The difference in summer heat and rainfall in 1916 and 1917 apparently furnishes a partial explanation of the relative rates from diarrhea and enteritis in these two years.

INFANT MORTALITY.

Mean, maximum, and minimum monthly temperatures and monthly precipitation, at Whiting, Ind., in 1916 and 1917.

1916	Temperature (° F.).			Precipitation (Inches).	1917	Temperature (° F.).			Precipitation (Inches).
	Mean.	Maximum.	Minimum.			Mean.	Maximum.	Minimum.	
July.....	77.0	102	59	0.56	July.....	72.2	97	50	12.94
August.....	75.8	100	50	1.04	August.....	72.0	94	51	11.92
September.....	64.4	92	33	1.89	September.....	64.6	87	40	2.87
October.....	53.6	89	29	3.40	October.....	45.4	70	19	4.56
November.....	42.6	76	13	1.72	November.....	42.2	71	21	0.26
December.....	25.0	64	-10	3.33	December.....	21.5	50	-12	2.49
January.....	29.0	60	-7	5.01	January.....	23.0	45	-12	1.49
February.....	24.0	52	-5	1.01	February.....	20.2	48	-12	0.42
March.....	34.2	73	7	2.61	March.....	37.8	77	10	3.16
April.....	47.5	80	24	1.08	April.....	45.4	84	28	1.72
May.....	60.2	90	37	4.41	May.....	52.2	89	31	2.33
June.....	63.0	86	48	7.94	June.....	64.0	88	40	13.34

¹ Figures are for Hammond, Ind., those for Whiting for June, July, and August, 1917, being unobtainable.

In Table II the rates of mortality from the several causes of deaths are shown according to the nativity of the mother. A striking contrast is noted in the rates from gastric and intestinal diseases. Among infants of foreign-born mothers the mortality rate from these diseases was 61.5, or 2½ times the rate, 25.5, among infants of native white mothers.

The mortality from gastric and intestinal diseases is largely, if not wholly, preventable. This preventability is illustrated in part at least by the figures showing the reduction in the infant death rate from diarrhea and enteritis in the death-registration States from 37.7 in 1910 to 23.2 in 1917,¹⁴ and again by the fall in the infant mortality rate from gastric and intestinal diseases in the birth-registration area as of 1915, exclusive of Rhode Island, from 24.6 in 1915, to only 19.0 in 1919.¹⁵

It is illustrated further in the wide variation in the mortality from these causes in different areas. Thus in the cities studied by the Children's Bureau, Saginaw, Mich., had an infant mortality rate from gastric and intestinal diseases of only 8.2, while at the other extreme, Manchester, N. H., had a rate of 63.3, higher even than that for Gary. New Zealand's rate of 2.7 in 1918 shows the possibilities of reduction in the mortality from gastric and intestinal diseases.

¹⁴ The following table shows the death rate from diarrhea and enteritis per 1,000 estimated mid-year population under 1 year of age in the death-registration States of 1910 (exclusive of North Carolina), 1910 to 1917:

Cause of death.	Death rate per 1,000 infants under 1 year of age.							
	1917	1916	1915	1914	1913	1912	1911	1910
Diarrhea and enteritis.....	23.2	24.1	22.6	24.7	28.1	26.2	29.0	37.7

U. S. Bureau of the Census, Mortality Statistics, 1917, p. 64.

¹⁵ Compiled from Birth Statistics, 1915, p. 21; 1919, pp. 24, 288; and Mortality Statistics, 1915, pp. 647-657.

The methods which have proved most effective in reducing the death rate of infants from gastric and intestinal diseases are education and instruction of mothers in the care of babies, with special attention to proper feeding and insistence upon medical supervision of babies who can not have the benefits of breast milk; provision of pure-milk supply and supervision to see that its excellence is maintained, and improvement of community sanitation and housing.

CAUSES OF DEATH PECULIAR TO EARLY INFANCY.

The infant mortality rate in Gary from causes of death peculiar to early infancy among babies born in 1916 was 25.1, half that from gastric and intestinal diseases. In the birth-registration area in 1916, premature birth, congenital debility, and injuries at birth—the three causes grouped together under early infancy—produced an infant mortality rate of 33.7. Contrary to what was true for gastric and intestinal diseases, comparison with the registration area is in this instance favorable to Gary.

Of the 34 deaths from causes connected with early infancy, 30 occurred before the end of the first month and 28 before the end of the first two weeks of life. Two-thirds of the deaths under 1 month of age from causes connected with early infancy were attributed to premature birth, which was the largest single cause of early death. Congenital debility, a term used to describe a baby's lack of vitality from birth, claimed 9 babies within the first 14 days of life, 2 in the second month, 1 in the fifth, and 1 in the seventh month. Injuries at birth caused the death of but 1 child, which occurred in the first few days after birth.

TABLE II.—*Infant mortality rates, by cause of death, and color and nativity of mother; live births in Gary in 1916.*

Cause of death.	Deaths among infants born in 1916 to—						Negro mothers. ¹
	All mothers.		Native white mothers.		Foreign-born white mothers.		
	Num-ber.	Infant mortal-ity rate.	Num-ber.	Infant mortal-ity rate.	Num-ber.	Infant mortal-ity rate.	
All causes.....	169	124.9	37	96.6	128	133.5	4
Gastric and intestinal diseases.....	68	50.3	9	23.5	59	61.5	.....
Respiratory diseases.....	27	19.9	6	15.7	19	19.8	2
Malformations.....	11	8.1	4	10.4	7	7.3	.....
Early infancy.....	34	25.1	13	33.9	20	20.9	1
Premature birth.....	20	14.8	9	23.5	11	11.5	.....
Congenital debility.....	13	9.6	3	7.8	9	9.4	1
Injuries at birth.....	1	0.7	1	2.6	.....	.....	.....
Epidemic and other communicable diseases.....	15	11.1	4	10.4	10	10.4	1
External causes.....	1	0.7	.....	.....	1	1.0	.....
Diseases ill defined or unknown.....	8	5.9	1	2.6	7	7.3	.....
All other causes.....	5	3.7	.....	.....	5	5.2	.....

¹ Rates not shown where base is less than 100.

If the infant mortality rate from causes connected with early infancy for babies of native white mothers is compared with that for the babies of mothers who were foreign born, an interesting and marked contrast is presented. The rate for infants of native white mothers was 33.9; for infants of foreign-born mothers, 20.9. The mortality rate from premature birth for babies of native white mothers was a trifle more than twice that for babies of foreign-born mothers. This excess may be due in part to a higher proportion of first births among those to native white mothers, since, as will be shown later, the proportion of premature births is especially high among first births. Variations in the mortality from causes peculiar to early infancy in the birth-registration area as a whole,¹⁶ similar to those just discussed for Gary, raise the question whether these comparatively low rates in the first days of life among children of foreign-born mothers of certain race groups may not be explained in part by racial differences in the difficulty of labor or in the vitality of babies at birth.¹⁷

Since the causes of death peculiar to early infancy are chiefly prenatal or natal in their origin, it is evident that, to be successful, measures to control them must be initiated before the birth of the child. Experience has proved that both infant and maternal life are conserved by instruction of a mother in the care of herself prior to the birth of her child, by medical supervision during the prenatal period, and by skilled medical and nursing service at confinement. Only by such supervision during pregnancy and by skilled assistance during confinement is it possible to reduce to a minimum the danger of complications of pregnancy and confinement. With such skilled assistance and supervision, much of the mortality within the first month of life is preventable.¹⁸

In 1916 there was no provision by the city of Gary, and but little through private agencies, for prenatal clinics and instructive nursing service for pregnant women.¹⁹ The city's infant mortality rate from

¹⁶ See U. S. Bureau of Census, *Birth Statistics: 1916*, pp. 16, 17; *1917*, pp. 15, 16; *1918*, 24-26.

¹⁷ Cf. *Birth Statistics, 1918*, p. 26.

¹⁸ Carnegie United Kingdom Trust Report on the Physical Welfare of Mothers and Children (England and Wales), Vol. I, pp. VIII and IX. In a note on the report Sir Arthur Newsholme says: "Of the total deaths of infants during the first year of life one-fifth occur during the first week, and one-third occur during the first month after birth. Here again local variations show the extent to which preventable mortality prevails. For instance, in Workington, Dewsbury, Batley, Chesterfield, and Tynemouth, two to three times as large a proportion of the infants born die in the first week after birth as in Leyton, Heywood, or Hornsey. The conditions leading to this excessive maternal and early infantile mortality are complex; but two stand out as most important. These are the lack of skilled medical, nursing, and ancillary domestic assistance; and the fact that such assistance as is obtainable is given under unsatisfactory domiciliary conditions. * * * Maternity homes are urgently needed, and I know of no social work so likely as the provision of such maternity homes to give immediate results in saving maternal and child life, in diminishing chronic invalidism of mothers, and in enhancing the national welfare."

¹⁹ See p. 28 ff. for discussion of the prevalence of prenatal care among the groups of mothers studied.

causes connected with early infancy (25.1) already lower than that for the birth-registration area, might be still further reduced through the establishment of organized help and prenatal and confinement care for mothers.

MALFORMATIONS.

The infant mortality rate among Gary babies from malformations was 8.1 as against a corresponding rate of 6.8 for the birth-registration area. Just as the mortality from causes peculiar to early infancy was higher for babies of native white mothers than for babies of foreign-born mothers, so here, too, the rate for babies of native mothers (10.4) was less favorable than that (7.3) for babies whose mothers were born outside the United States. A similar difference in rate of infant mortality in favor of the children of foreign-born mothers is shown in the birth-registration area when the rate from malformations among the white children of foreign-born mothers (5.6) is compared with the rate (7.7) for white children of native mothers.²⁰

Of the infants who died because of malformations six died within the first two weeks after birth; three others failed to survive the second, one the fourth, and one the seventh month of life. As a cause of death, therefore, malformations swell the losses during the days immediately following birth. Of all causes of death, malformations are least controllable and least preventable by scientific effort.

RESPIRATORY DISEASES.

Acute bronchitis, broncho-pneumonia, and pneumonia were together responsible for the infant deaths of 27 babies born in Gary in 1916. The infant mortality rate from this group of diseases was 19.9; in the birth-registration area as a whole the infant mortality rate from similar causes in 1916 was 15.9. A glance at Chart I, shows that an increased number of deaths from respiratory diseases occurred during the months January, February, and March. This is in agreement with the findings of other studies, namely, a greater incidence of respiratory diseases in the late winter and early spring.

In the case of respiratory diseases, as in that of gastric and intestinal, the mortality rate for babies with foreign-born mothers (19.8) was higher than that for babies whose mothers were native white (15.7). The difference, however, was not so large as in the birth-registration area as a whole, where the figure for white infants of foreign-born mothers was 21 and for white infants of native mothers only 11.1.²¹

The infant death rate from the principal respiratory diseases in the death-registration States of 1910 decreased from 19.5 in 1910 to

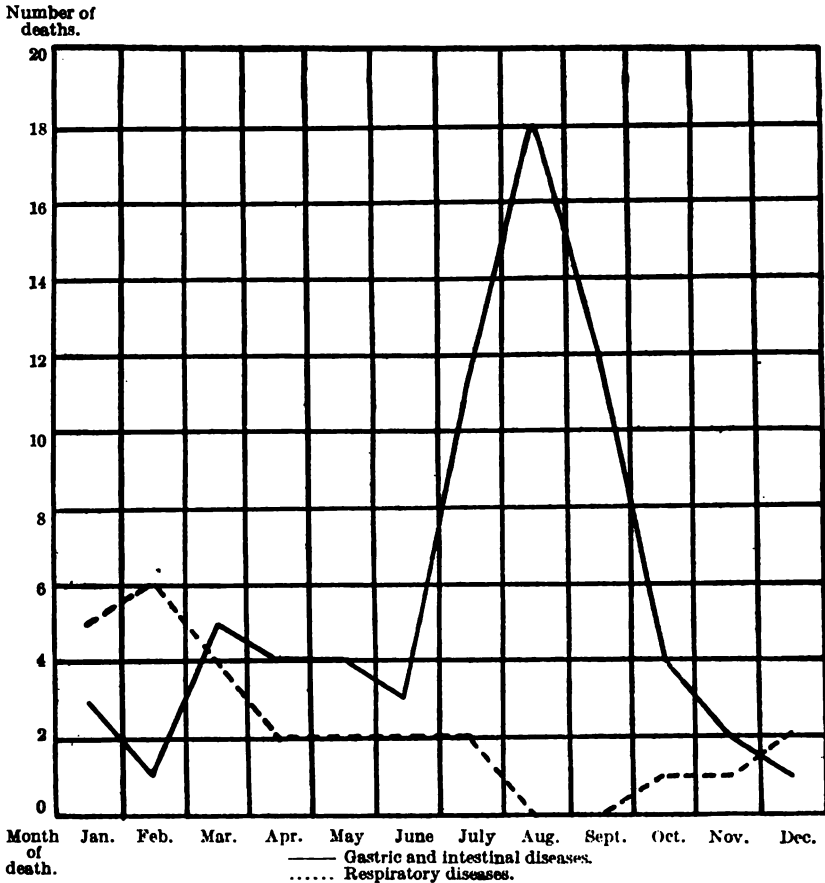
²⁰ U. S. Bureau of the Census, Birth Statistics, 1916, p. 17.

²¹ U. S. Bureau of the Census, Birth Statistics, 1916, p. 17.

16.2 in 1916;²² while in the birth-registration area as of 1915, exclusive of Rhode Island, the infant mortality rate from these causes decreased from 16.6 in 1915 to only 14.5 in 1919.²³

Whatever serves to increase the infant's power of resistance also serves to minimize the power of the respiratory diseases to fasten

CHART I.—Deaths from respiratory and from gastric and intestinal diseases, by month of death.



themselves upon him. The importance of educating mothers is again apparent, as well as the necessity for making each mother

²² U. S. Bureau of the Census, *Mortality Statistics, 1916*, p. 57: Death rate per 1,000 estimated mid-year population under 1 year of age from acute bronchitis, pneumonia, and broncho-pneumonia in the death-registration States as of 1910 (exclusive of North Carolina): 1910 to 1916.

Cause of death.	1916	1915	1914	1913	1912	1911	1910
Acute bronchitis.....	2.4	2.5	2.6	2.9	3.1	3.0	3.7
Pneumonia.....	4.2	4.5	4.8	5.3	5.7	5.6	6.9
Broncho-pneumonia.....	9.6	10.1	9.9	9.9	9.3	8.6	8.9

²³ Compiled from *Birth Statistics, 1915*, p. 21; 1919, pp. 24, 288, and *Mortality Statistics, 1915*, pp. 647-657.

realize the value of breast milk and fresh air in developing and maintaining her child's ability to withstand disease, the danger of exposure to severe weather of an insufficiently clothed infant, and the danger in permitting a baby to come in contact with persons suffering from colds.

OTHER COMMUNICABLE DISEASES.

Of the 169 deaths among infants born in Gary in 1916 about 1 death in 11 was attributed to other communicable diseases.²⁴ The infant mortality rate was 11.1 in Gary and 8.9 in the birth-registration area, a comparison again unfavorable to Gary. Measles and whooping cough were responsible for 8 of the 15 infant deaths in Gary from this group of diseases. A fatalistic attitude is still prevalent with reference to these children's diseases and the necessity for each child to undergo both illnesses sooner or later. The real menace which both diseases offer to the life of a baby is not yet sufficiently appreciated by the majority of mothers, consequently too small an effort is made to protect babies from exposure to measles and whooping cough.

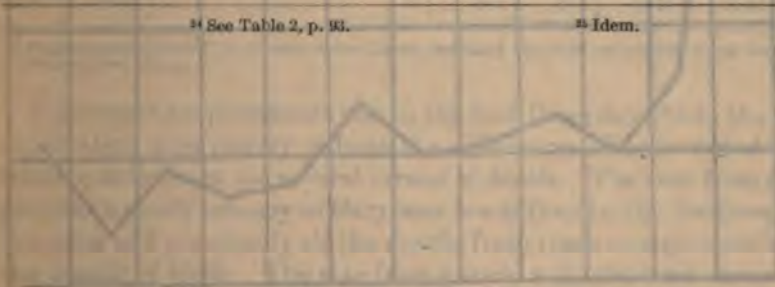
OTHER CAUSES OF DEATH.

Other causes of death besides the ones already discussed, produced an infant mortality rate of 10.3 in Gary and practically the same rate (10.1) in the birth-registration area in 1916.²⁵

The preceding discussion has shown how the excess of the infant mortality rate among infants born in Gary in 1916 (124.9) over the infant mortality rate in the birth-registration area in the same year (101.0) was distributed among the different groups of diseases militating against infant life. The heaviest contributor to this excess was the largely governable and preventable gastric and intestinal diseases.

²⁴ See Table 2, p. 93.

²⁵ Idem.



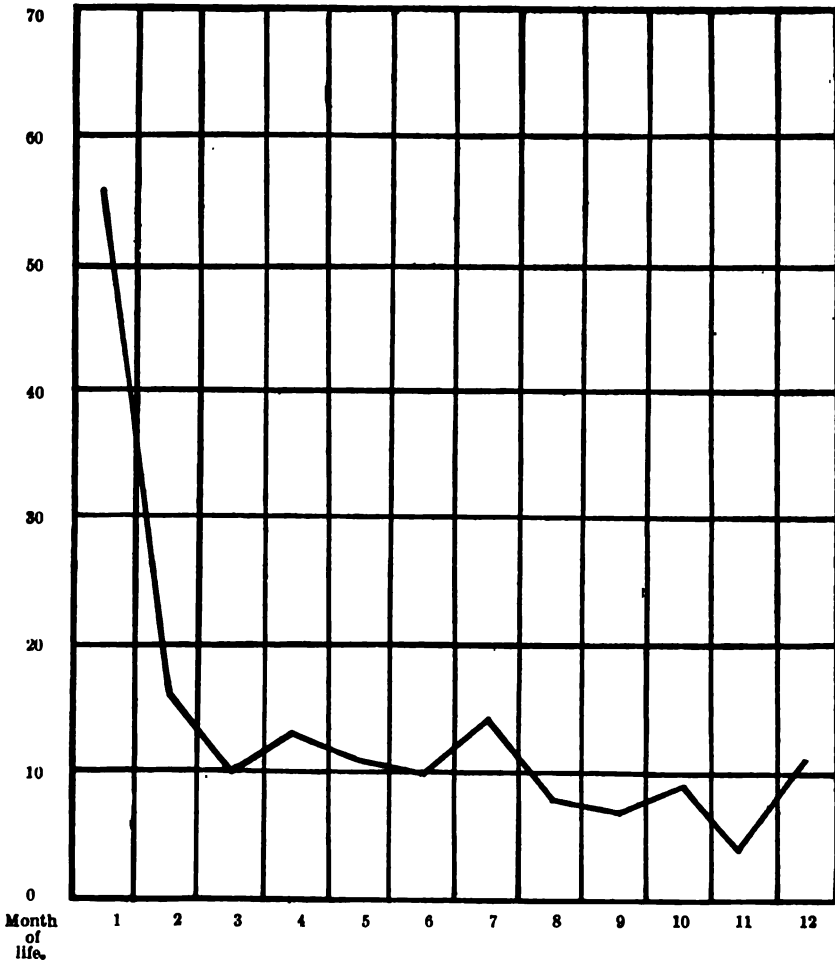
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AGE AT DEATH.

Chart II shows that the first weeks of life are the ones fraught with the greatest peril. The curve indicating the number of infant deaths in Gary begins with a precipitous descent and drops from 56 deaths during the first month to 16 in the second; from the third on, it

Number
of
deaths.

CHART II.—Deaths, by month of life.



hovers near an average of 10 deaths per month, save in the eleventh month, when it sinks to its lowest number, 4. Had the high loss during the first four weeks been maintained for each succeeding month of the first year, but half the babies born in Gary in 1916

would have survived 12 months. Fortunately, no other period of infancy makes such severe demands upon the human organism to adjust itself to so new and different an environment as do the weeks immediately following birth. The lessening in number of deaths was marked between the first and the second three months of the first year and the fall in the remaining half of the year was steady. In Gary 82 babies (48.5 per cent of the entire number dying) perished before the end of the first quarter of the first year of life; 34 more (20.1 per cent) succumbed before six months had passed; 29 (17.2 per cent) died in the third, and 24 (14.2 per cent) in the fourth quarter. If these percentages are compared with corresponding percentages for the birth-registration area, a larger proportionate loss in the first three months (59.8 per cent) is disclosed in the registration area.

TABLE III.—Age at death; deaths among infants born in Gary in 1916 and infant deaths in the birth-registration area in 1916.

Age at death.	Infant deaths.					
	Gary.			Birth-registration area. ¹		
	Number.	Per cent distribution.	Per 1,000 live births.	Number.	Per cent distribution.	Per 1,000 live births.
Total.....	169	100.0	124.9	82,734	100.0	101.0
Under 1 month.....	56	33.1	41.4	36,111	43.6	44.1
Under 1 day.....	24	14.2	17.7	12,133	14.7	14.8
1 day, under 2.....	3	1.8	2.2	3,997	4.8	4.9
2 days, under 3.....	2	1.2	1.5	2,989	3.6	3.6
3 days, under 7.....	8	4.7	5.9	5,657	6.8	6.9
1 week, under 2.....	8	4.7	5.9	4,766	5.8	5.8
2 weeks, under 1 month.....	11	6.5	8.1	6,569	7.9	8.0
1 month, under 2.....	16	9.5	11.8	7,425	9.0	9.1
2 months, under 3.....	10	5.9	7.4	5,968	7.2	7.3
3 months, under 6.....	34	20.1	25.1	13,837	16.7	16.9
6 months, under 9.....	29	17.2	21.4	10,679	12.9	13.0
9 months, under 12.....	24	14.2	17.7	8,714	10.5	10.6

¹ Figures derived from U. S. Bureau of the Census, Mortality Statistics, 1916, Table II, pp. 483-525, and Birth Statistics, 1916, p. 4.

This larger proportionate loss in the first three months in the birth-registration area merely reflects the differences already noted in the relative rates from the several causes of death. The rate from causes peculiar to early infancy in Gary was lower than in the birth-registration area and practically all the deaths from these causes occur within one month of birth. The rate from gastric and intestinal diseases, on the other hand, was nearly twice as high in Gary as in the registration area, and about two-thirds of the deaths from these causes in Gary occurred during the last nine months of the first year of life. The mortality rates in Gary and in the birth-registration area for the first three months of life were practically identical, 60.6 and 60.5. The excess of the mortality rate for the first year in Gary, 124.9, over that in the birth-registration area, 101.0, was brought about by an

excess of the rate in Gary among babies who had successfully come through their first three months.

TABLE IV.—*Age at death, by color and nativity of mother; deaths among infants born in Gary in 1916.*

Age at death.	Deaths among infants born in 1916—						
	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers. ¹
	Number.	Per 1,000 live births.	Number.	Per 1,000 live births.	Number.	Per 1,000 live births.	Number.
Total.....	169	124.9	37	96.6	128	133.5	4
Under 3 months.....	82	60.6	23	60.1	57	59.4	1
3 months, under 12.....	87	64.3	14	36.6	71	74.0	2

¹ Rate not shown where base is less than 100.

Within the city itself a contrast similar to the one just noted between Gary and the birth-registration area was found in connection with the mortality rates for infants of native white and for infants of foreign-born mothers. During the first three months of life the mortality rate among babies of native white mothers was 60.1 and among infants of foreign-born mothers, 59.4. During the first year of life the mortality rate among babies born in 1916 to native white mothers was 96.6 and to foreign-born mothers, 133.5. The difference in the rates for the first year of life is evidently due entirely to a difference in the rates in the two groups between 3 and 12 months of age. Reference to Table IV shows that the excess in the rate between 3 and 12 months of age among infants of foreign-born mothers is largely accounted for by the very heavy mortality from gastric and intestinal diseases, the rate in this group being over 2½ times that among babies of native white mothers.

STILLBIRTHS.

The causes underlying deaths prior to or at birth are closely analogous to many of those responsible for the death of live-born babies within the first two weeks after birth, a fact which gives pertinence to a discussion of stillbirths in connection with a study of infant mortality.

An appreciation of the importance of prenatal and natal conditions in relation to loss of infant life may be gained from consideration of all infant losses due to conditions existing before the birth of the child rather than to adverse postnatal environment, feeding, or care. For Gary this group is composed of 40 stillbirths and 38 of the deaths of infants under 2 weeks of age; and constitutes well over a third (37.3 per cent) of the total loss (209) of infant life. If the total deaths from causes peculiar to early infancy (34) and from malformations (11) are grouped with the stillbirths (40) the proportionate loss clearly ascribable to prenatal and natal conditions is 40.7 per cent.

Stillbirths formed 2.9 per cent of the total births in Gary in 1916. The stillbirth rate did not vary for births to native white and to foreign-born mothers, being in both cases 2.8. It is interesting to note that the highest stillbirth rate (4.4) was found among babies to Polish mothers, the same nationality group in which the highest infant mortality rate (148.3) obtained. If, however, births from all pregnancies to the entire group of mothers are considered the stillbirth rate is 3.0; for babies of native white mothers, it is 3.4; for those of foreign-born mothers 2.9; and the rate for babies of Polish mothers (3.3), though higher than the rates for the babies of Serbian and Croatian and of Slovak mothers, was lower than those for babies of German (4.7), Italian (3.9), or Lithuanian (3.4) mothers. (Table VI.)

TABLE V.—Stillbirth rates, by color and nationality of mother; births in Gary in 1916.

Color and nationality of mother.	Total births.	Stillbirths.	
		Number.	Per cent. ¹
Total.....	1,393	40	2.9
Native white.....	394	11	2.8
Foreign-born white.....	987	28	2.8
Polish.....	275	12	4.4
Serbian and Croatian.....	162	4	2.5
Slovak.....	135	3	2.2
All other.....	415	9	2.2
Negro ²	12	1	.....

¹ Not shown where base is less than 100.

² The negro mothers were all native.

TABLE VI.—*Stillbirth rates, by color and nationality of mother; births from all pregnancies.*

Color and nationality of mother.	Births, all pregnancies.		
	Total.	Stillbirths.	
		Number.	Per cent. ¹
Total.....	4,714	142	2.0
Native white.....	1,054	36	3.4
Foreign-born white.....	3,632	105	2.9
Polish.....	1,023	34	3.3
Serbian and Croatian.....	605	17	2.8
Slovak.....	515	12	2.3
Italian.....	254	10	3.9
Magyar.....	243	2	0.8
Lithuanian and Lettish.....	232	8	3.4
German.....	150	7	4.7
All other.....	610	15	2.5
Negro.....	28	1	.....

¹ Not shown where base is less than 100.

A partial indication of the extent of loss of life before birth is afforded by these data relating to stillbirths. It must be remembered, however, that they give no gauge of the number of losses due to miscarriage at less than seven months' gestation. Moreover, the registration of stillbirths is imperfect and the methods employed to discover unregistered live births are found to be less effective in tracing stillbirths.

FEEDING.

Among the factors inimical to infant life, improper feeding is of great importance. Breast milk, because of its cleanliness, purity, composition, and adaptability to the changing needs of the growing organism of the baby, is superior to any other form of infant food, and medical authorities agree that the use of any substitute is attended by risk to the infant's health. The danger to which the very young child may be exposed through insanitary surroundings, or through the mother's poverty, carelessness, or ignorance, will be minimized if the child is breast-fed and aggravated if artificial feeding is adopted.

Of the 1,353 babies born alive in Gary in 1916, 31 died before they could be fed. The discussion of feeding as affecting infant life is, therefore, limited to examination of the methods used among the 1,322 babies surviving long enough to receive food. Classification has been made on the basis of those breast fed exclusively; those in part artificially fed, i. e., the babies receiving some other food in addition to mother's milk; and those artificially fed, i. e., infants receiving no breast milk. The difficulty of presenting such a subject as infant feeding by means of tabular analysis is ever present because feeding is so eminently a changing process. When one or more types of feeding were employed during a given month, that type which predominated the greater part of the month was chosen as representative. Because there is general agreement that after the ninth month of life exclusive breast feeding is not only no longer necessary but not even advisable, the analysis in the tables has been largely limited to the first nine months of the first year of life.

EXTENT OF DIFFERENT TYPES OF FEEDING.

All but 91 (7 per cent) of these 1,322 babies are known to have been wholly breast fed during the first month of life, while 58 (4.4 per cent) were artificially fed during this period. More than three-fourths of the infant survivors in each of the first four months were exclusively breast fed. The decrease in breast feeding from month to month was steady except during the seventh month, when the percentage of breast-fed infants was reduced by over 15 per cent from the percentage in the preceding month.

In the majority of cases where the feeding was changed from exclusive breast feeding, the babies became part of the group having breast milk supplemented by artificial food. By the end of the first three-quarters of the year slightly over one-third (35 per cent) of the babies surviving were still exclusively breast fed; less than one-fourth (23 per cent) were receiving no breast milk; and 42 per cent, a little over two-fifths of the entire number alive, were having

mother's milk supplemented by some other form of food. (Table VII).

TABLE VII.—*Type of feeding, by month of life; infants born in Gary in 1916.*

Month of life.	Infants born in 1916 surviving at beginning of month.								
	Total.	Exclusively breast fed.		Partially breast fed.		Artificially fed.		Feeding not reported.	
		Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.
First.....	1,322	1,231	93.1	26	2.0	58	4.4	7	0.5
Second.....	1,297	1,152	88.8	48	3.7	91	7.0	6	.5
Third.....	1,281	1,080	84.3	68	5.3	128	10.0	5	.4
Fourth.....	1,271	987	77.7	114	9.0	164	12.9	6	.5
Fifth.....	1,258	910	72.3	154	12.2	188	14.9	6	.5
Sixth.....	1,247	836	67.0	210	16.8	195	15.6	6	.5
Seventh.....	1,237	636	51.4	368	29.7	227	18.4	6	.5
Eighth.....	1,223	542	44.3	428	35.0	248	20.3	5	.4
Ninth.....	1,215	430	35.4	507	41.7	273	22.5	5	.4

¹ Excludes 31 infants who died not fed.

DEATH RATES AND TYPE OF FEEDING.

The relative advantage which the breast-fed infant has over the infant artificially fed is brought out strikingly in Table VIII, which presents the monthly death rates per 1,000 for infants exclusively breast fed, in part artificially fed, or wholly artificially fed in the different months of life.

Up to the ninth month the death rate in every month among the artificially-fed infants at least quadrupled that among those exclusively breast fed. The rates for the infants receiving partial breast feeding occupied a mid-position and for the most part exceeded the monthly rates for the purely breast fed and fell short of those for the infants receiving no breast milk. From this it may be argued that even partial breast feeding affords an appreciable protection to the infant.

TABLE VIII.—*Monthly death rates, by type of feeding; infants born in Gary in 1916.*

Month of life.	Deaths in month per 1,000 survivors at beginning of month.	Deaths in month per 1,000 infants.		
		Exclusively breast fed.	Partially breast fed.	Artificially fed.
First.....	¹ 18.9	15.4	38.5	69.0
Second.....	12.3	7.8	20.8	54.9
Third.....	7.8	5.6	14.7	23.4
Fourth.....	10.2	5.1	8.8	42.7
Fifth.....	8.7	5.5	.....	31.9
Sixth.....	8.0	2.4	4.8	35.9
Seventh.....	11.3	4.7	5.4	39.6
Eighth.....	6.5	3.7	2.3	20.2
Ninth.....	5.8	4.7	.....	18.3
Tenth to twelfth (average).....	6.7	3.5	6.3	9.5

¹ The rate is per 1,000 infants who lived long enough to be fed. The rate per 1,000 live births is 41.4; 31 infants died not fed.

COMPUTED ANNUAL DEATH RATE AND TYPE OF FEEDING.

It will be recalled (see p. 4) that among the 1,353 live births in 1916 there were 169 infant deaths, making the infant mortality rate for the city 124.9. In other words, of 1,000 infants born alive, 125 died before the first birthday. If the monthly death rates for all infants (Table VIII) are applied to 1,000 infants who lived long enough to be fed and the losses in each month subtracted successively to learn the number of survivors at the beginning of the next month, the end of the twelfth month will show 896 of the 1,000 infants alive and 104 dead. In a similar manner the number of deaths in the first year of life among 1,000 infants breast fed or among 1,000 infants artificially fed can be computed from the monthly death rates for the respective types of feeding. Such a computation serves to bring out in a striking manner the comparative merits of breast, partially artificial, and wholly artificial feeding. Had the group of 1,000 been breast fed the entire first year of life only 64 would have died; if partially breast fed, 109 would have died before the end of a year; while if the entire 1,000 had been subjected to the hazards of purely artificial feeding 310 deaths would have resulted. In other words the mortality rate for exclusively artificially-fed babies in Gary averaged 5 times that for exclusively breast-fed babies and almost 3 times that for partially breast-fed infants.

TYPE OF FEEDING AND CAUSE OF DEATH.

As would be expected, the greatest excess in mortality among infants artificially fed is caused by gastric and intestinal diseases. The mortality rates from these diseases varied from 2 to over 12 times as high among infants artificially fed as among infants breast fed. Artificially-fed infants are subjected to increased hazard from ill adapted and improperly prepared food. Another measure of this extra hazard is offered in a comparison of the actual deaths among the exclusively artificially-fed babies with the number of deaths that would have occurred if they had been breast fed. If the rates of mortality from gastric and intestinal diseases that prevailed among breast-fed infants had prevailed also among the artificially fed, only 4 deaths instead of 32 would have occurred in this group. The mortality rate from these diseases among the artificially fed was therefore on an average 8 times as high as among breast-fed infants.

Not only was the mortality from gastric and intestinal diseases among artificially-fed babies greater than among breast-fed babies, but the mortality from all other causes of death, including respiratory and other communicable diseases, was also markedly greater among the artificially fed. A computation similar to that given above shows that if the rates of mortality from all causes except gastric

and intestinal diseases prevailing among breast-fed infants had prevailed also among the artificially fed, only 7 instead of 30 deaths would have occurred among them. The mortality from these causes among the artificially-fed infants was thus about 4 times as high as among breast-fed infants. This bears out the statement made in the discussion of the mortality from respiratory diseases that breast feeding affords a definite protection against respiratory and other infections.²⁶

SUPERVISION OF AND REASONS FOR WEANING.

Since breast feeding tends markedly to increase and artificial feeding to lessen the infant's chance of survival, as the rates just cited so clearly demonstrate, the reasons why 58 babies were artificially fed in the first month of life are of interest, although it must be remembered that the reasons given are the mothers' statements which might not always correspond with physicians' diagnosis even in cases where physicians were consulted. Ten mothers stated that they were ill and unable to nurse their babies; 10 more reported breast infections or other reasons connected with their health. In 30 cases the mothers reported that the milk ceased or was insufficient; in 3 cases that it disagreed with the child; in 1 case that the infant was ill, and in another that the infant refused to nurse.

Of the 58 infants, 32 were never breast fed or were weaned within the first 15 days after birth by advice of physician; for 26, or 45 per cent, the action was taken without physician's counsel.

Of the 384 infants weaned before the end of the ninth month, 148, or 39 per cent, were weaned on the advice of a physician, while 236, or nearly two-thirds, were weaned without such advice.

For infants weaned before the end of the ninth month the inadequacy or the complete cessation of the supply of breast milk was the reason far more frequently reported than any other. Of these 384 infants, 155, or two-fifths, according to the mothers' statements, were no longer nursed because of failure or insufficiency of mother's milk. In over two-thirds of these cases the infants had been deprived of breast milk even before they entered upon their fourth month.²⁷ Doubtless wider dissemination of knowledge of the importance of breast feeding and of the factors which promote it would serve to lower the proportion of mothers whose supply of breast milk shrinks prematurely or disappears.

²⁶ The computations in this section are based on figures given in Tables 5 and 30, pp. 95-96, 116.

²⁷ About three-fifths of the babies weaned at or before the end of three months were weaned because the mother's milk ceased or became insufficient.

TABLE IX.—Prevalence of artificial feeding, by color and nativity of mother; infants born in Gary in 1916.

Color and nativity of mother.	Infants born in 1916 surviving at end of—								
	Three months.			Six months.			Nine months.		
	Total.	Artificially fed.		Total.	Artificially fed.		Total.	Artificially fed.	
		Num-ber.	Per-cent. ¹		Num-ber.	Per-cent. ¹		Num-ber.	Per-cent. ¹
Total.....	1,271	125	9.8	1,237	188	15.2	1,208	268	22.2
Native white.....	360	54	15.0	355	78	21.9	348	98	28.2
Foreign-born white.....	902	70	7.8	873	107	12.3	851	167	19.6
Negro.....	9	1	.....	9	3	.....	9	3	.....

¹ Not shown where base is less than 100.

NATIVITY OF MOTHER AND FEEDING CUSTOMS.

Only about one-half as large a proportion of babies of foreign-born mothers as of babies of native mothers were artificially fed at 3 months of age, the proportions being 7.8 per cent and 15 per cent respectively (Table IX); at 6 months the proportion was one-eighth for foreign born to about one-fifth for native; through the ninth month the ratio between the groups remained practically the same. Other things being equal, therefore, it would be expected that the mortality among infants of foreign-born mothers would be less than among infants of native white mothers, since a larger proportion of the infants of foreign-born mothers were breast fed.

A study of General Table 5, however, reveals that the death rates of infants of foreign-born mothers were higher each month than those for children of native mothers. If annual rates are computed as described previously for the breast fed and for the exclusively artificially fed in each nativity group, then of 1,000 breast-fed infants of native mothers 39 would have died before the end of the first year, while a similar group of infants of foreign-born mothers 71 would have died during the same period. Of 1,000 artificially-fed babies of native mothers 265 would have died before the end of the first year, while of the same number of artificially-fed babies of foreign-born mothers 333 would have died. In other words, whether breast fed or artificially fed, the children of the foreign-born mothers faced a greater hazard than the children of the native white mothers, when children receiving the same type of feeding are compared; but whether of native or of foreign-born mothers the babies artificially fed had a markedly higher rate of mortality than breast-fed babies.

The feeding customs of the native and the foreign-born mother were no doubt different in many respects. Some of these differences, like the greater prevalence of breast feeding among infants of foreign-

born mothers, tended to lessen while others contributed to increase the mortality rates among these infants as compared with those among infants of native mothers. Probably one such influence tending to make artificial feeding less fatal to the infants of native mothers was the accessibility and use of helpful supervision and advice. Of the babies either partially or wholly artificially fed, 313 were children of native and 729 were children of foreign-born mothers. Of the children of native mothers 63 per cent were receiving some supervision, while only 30 per cent of children of the foreign-born mothers received this care. As might have been expected, the foreign-born mother either could not or did not avail herself of advice on infant feeding through consulting books, pamphlets, or magazines to the same extent as did the native mother. Over one-fourth of the native mothers who artificially fed their babies read literature on infant feeding while only slightly more than one-twentieth of the foreign-born mothers reported that they received guidance from this source.²⁸

The substitutes for breast milk in common use are fresh milk, condensed milk, or some one of the patent infant foods which in this report are designated proprietary foods. The most widely used substitute in Gary among native and foreign-born alike was fresh milk. Of the babies of foreign-born mothers one-fourth had received no fresh milk under 15 months of age; a somewhat larger proportion of the babies of native white mothers (31 per cent) were given no fresh milk during this period.²⁹ Apparently the foreign-born mothers tended more toward feeding their children fresh milk before weaning them than did the native mothers, who seemed rather to make relatively greater use of fresh milk as infant food at or after weaning their babies.

Condensed milk and proprietary foods were used less by foreign-born than by native mothers (General Table 8, p. 99), proprietary foods were less popular than condensed milk, which in turn was much less used than fresh milk.

Greater similarity of custom in infant feeding according to nativity of mother is shown in the giving of solid food than in the use of any of the liquid foods. Of the infants of native white mothers 16 per cent and of the infants of foreign-born mothers 19 per cent received no solid food under 15 months of age. Under 9 months of age 40 per cent of the infants of the foreign-born and 32 per cent of the infants of native white mothers had received some solid food. This indicates a tendency among foreign-born mothers to give their babies solid food earlier than native mothers,³⁰ but many native as well as

²⁸ See General Table 7, p. 99.

²⁹ General Table 8, p. 99.

³⁰ Solid food has been considered any food other than breast milk, fresh cow's milk, condensed or evaporated milk, proprietary foods, and orange or fruit juice.

foreign-born mothers seemed to believe it necessary to accustom the baby to take solid food at an early age. One native mother began to feed her 3-months-old boy a mixture of molasses and butter, and gravy and bread "to get him used to eating." Another gave her child, 3 months old, "chewed rations" of whatever she herself ate, including meat, potatoes, gravy, bread, cake, and eggs. In general, such soft foods as oatmeal, farina, cornflakes, mush, soup, eggs, soaked crackers, and gravy on mashed potatoes or bread constituted the solid food diet. Having secured softness for the baby's diet, some mothers recognized little further cause for exclusion of an article as unfit. There were, for example, the Italian mother who gave her 6-months-old baby ginger snaps soaked in milk; the native mother who gave her 5-months-old child cornflakes, oatmeal, potatoes, bread and butter and tea; the Polish mother who gave oatmeal with bacon grease to her 8-months-old baby and cut off his supply of cow's milk; the Croatian woman who began to give her child coffee, bread, and soup when he was 7 months old; and the Slovak mother who gave her infant coffee and cereals from 4 months on.

TABLE X.—Age at which solid food was first given, by color and nativity of mother; infants born in Gary in 1916.

Age at which solid food first given.	Infants born in 1916 to—						Negro mothers. ¹
	All mothers.		Native white mothers.		Foreign-born white mothers.		
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	1,322	100.0	371	100.0	940	100.0	11
Not given under 15 months.....	245	18.5	61	16.4	181	19.3	3
Not reported, if given.....	10	0.8	2	0.5	8	0.9	.....
Given under 15 months.....	1,067	80.7	308	83.0	751	79.9	8
Under 1 month.....	6	0.5	2	0.5	4	0.4	.....
1 month, under 3.....	16	1.2	1	0.3	15	1.6	.....
3 months, under 6.....	105	7.9	24	6.5	80	8.5	1
6 months, under 9.....	375	28.4	93	25.1	278	29.6	4
9 months, under 12.....	272	20.6	86	23.2	185	19.7	1
12 months, under 15.....	287	21.7	100	27.0	186	19.8	1
Age not reported.....	6	0.5	2	0.5	3	0.3	1

¹ Per cent not shown where base is less than 100.

² Excludes 31 infants who died not fed.

INCOME, AND FEEDING METHODS.

In regard to the age at which infants were weaned slight differences of custom were observable among the various earnings groups.³¹

³¹ The earnings of the chief breadwinner in the family during the calendar year 1917 were taken as basis for division of families into income or earnings groups, in the belief that these earnings formed as good and dependable a means of determining economic status of families as could be secured in an investigation of this sort. A threefold classification has been made into families where the annual earnings of the chief breadwinner fell below \$1,050; those where he earned \$1,050, but less than \$1,850 in a year; and those where his earnings reached \$1,850 or over.

At the end of the first three months a slightly smaller proportion 8.3 per cent, of the infants belonging to the lowest income group had been weaned than in either the middle or the highest group, 10.2 and 12.2 per cent, respectively. At the end of the first nine months about two-tenths of the infants in each of the lower earnings groups had been weaned, as compared with slightly over three-tenths of those in the highest earnings group.²²

In all income groups fresh milk was the prevailing type of artificial feeding, condensed milk ranked second, and proprietary foods were least commonly used. The proportion of infants receiving each form of artificial food was greater in the highest income group than in the lowest.²³

TABLE XI.—*Supervision of feeding, by annual earnings of chief breadwinner; infants partially or exclusively artificially fed.*

Annual earnings of chief breadwinner.	Infants born in 1916 artificially or partially artificially fed during first year.						
	Total.	Feeding supervised.		Feeding not supervised.		Supervision not reported.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	1,053	421	40.0	631	59.9	1	0.1
Under \$1,050.....	304	93	30.6	210	69.1	1	0.3
\$1,050, under \$1,850.....	539	233	43.2	306	56.8	.....	.....
\$1,850 and over.....	153	76	49.7	77	50.3	.....	.....
No earnings, no chief breadwinner, and not reported.....	57	19	.....	38	.....	.....	.....

¹ Not shown where base is less than 100.

As might be expected, the artificially-fed babies in the lowest income group received the least feeding supervision. For 69 per cent of the infants artificially fed in the group whose breadwinners' annual earnings were under \$1,050 the feeding was not supervised; when the annual earnings were \$1,850 or over, only 50 per cent of the babies artificially fed were not supervised. With increase of income, therefore, the added supervision of feeding doubtless tended to offset the ills accompanying the greater use of artificial feeding, an important consideration in view of the much higher death rates which obtained among artificially-fed babies.

²² General Table 9, p. 100.

²³ General Table 10, p. 100.

MATERNAL MORTALITY AND MATERNITY CARE.

MATERNAL MORTALITY.

Seven mothers of babies included in this study died within 1 year after confinement in 1916, 3 of them from causes connected with childbirth. Of the 7 children born to these mothers only 2 survived 12 months, though 3 of the 5 who died were outlived by their mothers. One mother who developed active tuberculosis, following upon the birth of her child, was forced to wean her baby in the fifth or sixth week because of her own ill health. The baby died when a little over 9 weeks old and the mother's death occurred about a fortnight later. Another mother who had convulsions at the time of confinement was ill and bedridden until her death about 4 months afterwards. The baby, born prematurely, lived only 4 weeks. Another infant whose mother died of tuberculosis 9 months after the baby was born lived but a month; the cause of this infant's death was given on the death certificate as gastroenteritis. The mother of the fourth baby died of puerperal septicemia 16 days after full-term delivery. The baby, a healthy child at birth, was breast fed at home 9 days, spent the next week in the hospital to which the mother had been removed, and was then placed by the father in an infant asylum where he died at the age of 4½ months. The fifth child and the mother both died less than a day after the baby's premature birth.

The close interrelation between maternal welfare and infant welfare, between maternal mortality and infant death, requires no elaboration. The practically stationary death rate of mothers in this country from causes connected with childbearing serves, however, to indicate the need of giving further consideration to the causes of maternal mortality.³⁴

Table XII presents what it cost in mothers' lives to give birth to the children born in the registration area in 1916, in Indiana in 1917, and in the city of Gary in 1916. In the registration area one mother died for every 161 babies born alive as compared with one for every 138 in Indiana and one for every 140 in Gary. The proportion of

³⁴ Figures published by the Census Bureau for the years 1900 to 1919 (17.0 per 100,000 population) show steady maintenance of the maternal death rate since 1900. "And physicians remind us that the women who die in childbirth are few beside those who suffer preventable illness or a lifelong impairment of health. The loss involved is immeasurable. It does not stop with the loss of vigor and efficiency to the mother. It extends, in general, to the well-being of her home and her children; and, in particular, to the motherless infant who faces a peculiarly hazardous existence." Sixth Annual Report of Chief, U. S. Children's Bureau, p. 12.

this loss due to puerperal infections is also brought out in Table XII. The death rate from puerperal septicemia, like the rate from all causes connected with pregnancy or childbirth, shows little reduction from year to year,³⁵ yet puerperal sepsis as a cause of death is very largely preventable.³⁶ Gary's maternal mortality rate (5.9) from childbed fever in 1916 was more than twice that in the registration area, though the city's rate from all other puerperal causes compared favorably with that for the registration area.

CARE DURING PREGNANCY.

The care, supervision, and assistance given mothers during pregnancy and confinement are important both because of their connection with the questions of maternal mortality and well-being and on account of their inseparability from the problems of infant mortality.

TABLE XII.—*Maternal mortality rates, by cause of death, for the birth-registration area, 1916, Indiana 1917, and Gary, 1916.*

Area.	Population as of July 1, 1916.	Live births, 1916.	Deaths from diseases of pregnancy and confinement.								
			Total.			Puerperal septicemia.			All other.		
			Number.	Per 100,000 population.	Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 live births.
Birth - registration area ¹	33,013,280	818,983	5,091	15.4	6.2	2,066	6.2	2.5	3,025	9.2	3.7
Indiana ²	2,835,492	63,144	458	16.2	7.3	226	8.0	3.6	232	8.2	3.7
Gary ³	40,548	1,682	12	29.6	7.1	10	24.7	5.9	2	4.9	1.2

¹ U. S. Bureau of the Census, Birth Statistics, 1916, p. 4; Mortality Statistics, 1916, Tables 8 and 9.

² Figures for 1917. U. S. Bureau of the Census, Birth Statistics, 1917, p. 23; Mortality Statistics, 1917, p. 334.

³ Population estimated: U. S. Bureau of the Census, Mortality Statistics, 1916, p. 218.

Household help and work.

Somewhat over half the births in Gary in 1916 (51.5 per cent) were to mothers who reported no help with their housework during pregnancy. Only 12, less than 1 per cent, had no household duties for that period. Native white mothers received help with household duties to a much greater extent than did foreign-born mothers.³⁷ Fifty-eight per cent of the native white mothers and 32 per cent of the foreign born had household help for at least a month.

³⁵ U. S. Bureau of the Census, Mortality Statistics, 1917, Table II, p. 96: Death rate from puerperal septicemia per 100,000 population: Annual average 1901 to 1905, 6.3; annual average 1906-1910, 6.8; 1914, 7.1; 1915, 6.3; 1916, 6.7; 1917, 6.9.

³⁶ U. S. Bureau of the Census, Birth Statistics, 1917, Table I, p. 24; Mortality Statistics, 1917: Table 5, p. 239. In Indiana cities in 1917 maternal mortality from puerperal septicemia ranged from 1.9 to 12.8 per 1,000 live births, a variation indicative in a measure of the degree of possible preventability and the extent of needless and prodigal loss existing.

³⁷ General Table 11, p. 102.

Mother's gainful employment during pregnancy.

It happens not infrequently that the duties of the mother in a small household are not arduous, even though they include cooking, cleaning, washing, and ironing, as well as general care. If, however, a mother undertakes gainful work in addition to her usual home duties and the care of her family, the sum total of strain and effort entailed may become so great as to be harmful.

TABLE XIII.—*Employment of mother during pregnancy, and kind of work; births in Gary in 1916.*

Mother's place of employment during pregnancy and kind of work	Total births.	
	Number.	Per cent distribution.
All mothers.....	1,393	100.0
Mother not employed during pregnancy.....	984	70.6
Mother employed during pregnancy.....	409	29.4
Away from home.....	50	3.6
At home only.....	359	25.8
Keeping lodgers.....	344	24.7
Other.....	65	4.7

Of the births in Gary, 409 (29 per cent) were to mothers gainfully employed during pregnancy and only 50 (3.6 per cent) were to mothers employed outside their own homes. All but 65 of the mothers gainfully employed during pregnancy kept lodgers. Foreign-born mothers, who, as already pointed out, had less household help than the native white mothers, had the larger proportion gainfully employed in any way. They, too, were the ones most frequently keeping lodgers. Lodger keeping among the foreign born usually increased greatly the amount of work for the housewife. The "lodger" might be simply a "roomer," but he was more often a man for whom the mother cooked as well. Not uncommonly, in addition to preparation of the lodger's food and care of his room, his laundry and mending were done by the mother. Sometimes each man bought his own food and the mother cooked it, the number of articles prepared by her being limited only by the individual tastes and demands of her lodgers. Where all these functions were performed by one mother for several persons there can be no question that the amount of physical energy demanded of her for the tasks of lodger-keeping was large and in many cases it was excessive. The mothers of 279 infants (68 per cent of the total whose mothers were gainfully employed) did not cease work even within two weeks of confinement, and the mothers of 256 infants continued gainful work up to the very day or hour of confinement.

TABLE XIV.—*Infant mortality and stillbirth rates, by interval between mother's ceasing gainful work and confinement and color and nativity of mother; births in Gary in 1916.*

Interval between cessation of gainful work and confinement and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ¹
		Number.	Percent ¹			
All mothers.....	1,393	40	2.9	1,353	169	124.9
Not employed.....	984	25	2.5	959	116	120.9
Employed.....	409	15	3.7	394	53	134.5
Interval:						
Under 1 day.....	256	8	3.1	248	34	137.1
1 day, under two weeks.....	23			23	3	
2 weeks, under 1 month.....	11	1		10	3	
1 month, under 2.....	20	1		19	5	
2 months and over.....	90	5		85	8	
Not reported.....	9			9		
Native white mothers.....	394	11	2.8	383	37	96.6
Not employed.....	315	8	2.5	307	29	94.5
Employed.....	79	3		76	8	
Interval:						
Under 1 day.....	36	1		35	3	
1 day, under two weeks.....	6			6		
2 weeks, under 1 month.....	5	1		4	2	
1 month, under 2.....	7			7	1	
2 months and over.....	22	1		21	2	
Not reported.....	3			3		
Foreign-born white mothers.....	987	28	2.8	959	128	133.5
Not employed.....	658	16	2.4	642	84	130.8
Employed.....	329	12	3.6	317	44	138.8
Interval:						
Under 1 day.....	219	7	3.2	212	30	141.5
1 day, under 2 weeks.....	17			17	3	
2 weeks, under 1 month.....	6			6	1	
1 month, under 2.....	13	1		12	4	
2 months and over.....	68	4		64	6	
Not reported.....	6			6		
Negro mothers.....	12	1		11	4	
Not employed.....	11	1		10	3	
Employed.....	1			1	1	

¹ Not shown where base is less than 100.

That gainful employment of mothers during pregnancy, a higher stillbirth rate, and an increased infant mortality rate were coincident is demonstrated in Table XIV, which shows that the infant mortality rate was highest among babies whose mothers ceased gainful work less than a day before their babies were born.

Prenatal care and instruction.

The importance of prenatal care receives lamentably little recognition from mothers, who fail to be impressed by the pregnancies and confinements presenting serious difficulties because the greater number of pregnancies terminate favorably. Realization that expert medical supervision is not only wise but necessary for all pregnant women if the possible complications of pregnancy are to be combatted and those of confinement foreseen and guarded against has come slowly, and as yet but partially, to mothers and fathers even in our most enlightened communities. Yet, skilled prenatal and confinement care is admittedly a prerequisite to an attack upon the maternal mortality rate and the death rate of babies from causes connected with early infancy.

The prenatal care received by mothers in Gary in 1916 has been classified into three grades, designated A, B, and C. For the purpose

of the study, to be classified as Grade A the prenatal care given a mother must fulfill all four of the following requirements:

1. Monthly urinalysis at least from the fifth through the ninth month of pregnancy.
2. Medical supervision at least for the last five months.
3. Physical examination, preferably including examination of the heart, the lungs, and the abdomen, but at least providing examination of the abdomen.
4. Measurement of the pelvis in a woman bearing her first child in order to discover the existence of any malformation which might make birth difficult or impossible normally.

If the prenatal care given a mother failed to meet all these requirements it was classified as Grade B if it fulfilled all four of the following less stringent tests:

1. At least one urinalysis.
2. Some medical supervision.
3. An abdominal examination.
4. Pelvic measurements if the mother was a primipara.

Mothers who had had urinalysis or had made visits to physicians or clinics were classified as having had prenatal care of Grade C if the care failed in one or more particulars to satisfy the requirements of the higher grades.

Seven-tenths of the mothers had no prenatal care whatever; of the remaining three-tenths, 33 (2 per cent of the entire number of mothers) had care of Grade A; 54 (4 per cent) had Grade B care; and 318, almost one-fourth (23 per cent), received care which failed in some essential and could only be classed as Grade C.

TABLE XV.—Grade of prenatal care, by source of instruction in prenatal care; confinements in Gary in 1916.

Source of instruction in prenatal care.	Confinements in 1916 of mothers—														
	Receiving no prenatal care.		Receiving prenatal care of specified grade.						Not reported whether care received.						
			Total.		A.		B.				C.		Grade unknown.		
	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	
Total.....	1,376	966	70.2	406	29.5	33	2.4	54	3.9	318	23.1	1	0.1	4	0.3
No prenatal instruction.....	924	924	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prenatal instruction.....	451	42	9.3	406	90.0	33	7.3	54	12.0	318	70.5	1	0.2	3	0.7
Physician only.....	283	1	0.4	281	99.3	20	7.1	29	10.2	231	81.6	1	0.4	1	0.4
Physician and nurse.....	6	.....	.....	6	100.0	1	16.7	1	16.7	4	66.7	.....	.....	.....	.....
Physician, nurse, literature.....	10	.....	.....	10	100.0	2	20.0	3	30.0	5	50.0	.....	.....	.....	.....
Physician and literature.....	94	.....	.....	93	98.9	10	10.8	21	22.3	62	66.9	.....	.....	.....	.....
Nurse only.....	24	10	41.7	14	58.3	.....	.....	.....	.....	14	100.0	.....	.....	.....	.....
Nurse and literature.....	3	1	33.3	2	66.7	.....	.....	.....	.....	2	100.0	.....	.....	.....	.....
Literature only.....	31	30	96.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Not reported whether prenatal instruction received.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Not shown where base is less than 100.

² Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

No one of the three mothers who died from causes connected with childbirth had even a modicum of prenatal care. The mother who died of "septicemia following Cæsarian section" had had two children still-born because, as the father said, she was "built too little." Yet recourse was not had to a physician until after serious trouble had developed. The death certificate stated as contributory cause of death "septic before operation, three days." Another mother died of "acute dilatation of the heart following delivery of child." The delivery was instrumental as well as premature. There had been absolutely no consultation of a physician earlier in pregnancy. The third mother was delivered by a midwife. Septicemia developed; physicians were then summoned, and the mother removed to a hospital. In two of these instances the baby as well as the mother died.

Two hundred and fifty-seven confinements, somewhat less than a fifth (19 per cent) of the entire number, were at the termination of first pregnancies. Of these mothers, 129 (50 per cent) had some prenatal care, a proportion noticeably above that for the whole group (30 per cent). Among mothers bearing their first child, however, the percentage receiving Grade A care was no greater than among the group as a whole, while that for mothers receiving Grade B care was smaller, and the proportion with Grade C care was twice as high as for the entire group. Probably failure to take pelvic measurements was responsible for placing relatively more of the first pregnancy mothers in the lowest grade of prenatal care.

TABLE XVI.—Grade of prenatal care, by order of pregnancy; confinements in Gary in 1916.

Order of pregnancy	Confinements in 1916 of mothers—														
	Total.	Receiving no prenatal care.		Receiving prenatal care of specified grade.						Not reported whether care received.					
		Total.		A.		B.		C.		Grade unknown.					
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹		
Total.....	1,376	966	70.2	406	29.5	33	2.4	54	3.9	318	23.1	1	0.1	4	0.3
First.....	257	128	49.8	129	50.2	6	2.3	6	2.3	117	45.5				
Second.....	283	176	62.2	104	36.7	16	5.7	21	7.4	66	23.3	1	0.4	3	1.1
Third.....	251	181	72.1	69	27.5	6	2.4	12	4.8	51	20.3			1	0.4
Fourth.....	180	143	79.4	37	20.6	1	0.6	5	2.8	31	17.2				
Fifth.....	138	114	82.6	24	17.4	2	1.4	5	3.6	17	12.3				
Sixth.....	95	75	78.9	20	21.1	1	1.1	1	1.8	18	18.8				
Seventh.....	69	64	92.9	5	7.2	1	1.4	3	4.3	1	1.4				
Eighth.....	47	37	78.7	10	21.3			1	2.1						
Ninth.....	21	20	95.2	1	4.8				4.8						
Tenth or later.....	32	26	81.3	6	18.8				18.8						
Not reported.....	3	2	66.7	1	33.3					1	33.3				

¹ Not shown where base is less than 100.

² Includes 17 confinements which resulted in twin births, and 5 instances where mother had two confinements in 1916.

Eighty-eight per cent of the births were reported to have been attended by no complications.³⁸ Of the remaining 12 per cent (168) which were accompanied by complications, half were to mothers receiving some prenatal care; about one-twentieth to mothers who had Grade A care; one-twentieth to mothers with Grade B care; two-fifths to mothers whose care during pregnancy was of Grade C. Like mothers approaching their first confinement, mothers who experienced or feared some complication of pregnancy or confinement showed a greater tendency to seek prenatal supervision and help than was shown by the mothers as a whole or by those whose pregnancy was normal and presaged no difficulty for confinement. Even among mothers suffering some complication, however, 9 out of 10 either had no prenatal care or care of Grade C, a fact indicating an unmistakable need for educating mothers regarding what to seek and to demand in the way of care and supervision during pregnancy and at confinement.

TABLE XVII.—Grade of prenatal care of mother by complications of pregnancy and confinement; births in Gary in 1916.

Complications of pregnancy and confinement.	Births in 1916 to mothers—							Not reported whether care received.
	Total.	Receiving prenatal care of specified grade.						
		Receiving no prenatal care.	Total.	A.	B.	C.	Grade unknown.	
Total.....	1,393	980	409	33	54	321	1	4
No complications.....	1,224	896	324	24	46	253	1	4
Complications.....	169	84	85	9	8	68		
Prematurity only.....	48	29	19	4		15		
Prematurity with:								
Stillbirth.....	7	1	6			6		
Stillbirth and instrumental delivery.....	6	3	3	1	1	1		
Instrumental delivery.....	3	3						
Convulsions.....	1	1						
Instrumental delivery and convulsions.....	1		1	1				
Full-term births:								
Stillbirth only.....	17	14	3			3		
Stillbirth, convulsions, and instrumental delivery.....	1		1	1				
Stillbirth and instrumental delivery.....	8	4	4			4		
Stillbirth and Caesarian section.....	1	1						
Instrumental delivery.....	68	22	46	1	6	39		
Caesarian section.....	2	1	1		1			
Convulsions.....	5	5	6					
Not reported ¹	1		1	1				

¹ Period of gestation not reported; delivery instrumental.

Approximately one-third of the mothers had recognized a need for instruction in prenatal care and endeavored to secure it. Of these,

³⁸ The complications reported upon were instrumental delivery, Caesarian section, convulsions, premature delivery, and stillbirth.

29 per cent were advised and instructed by physicians and a small number (27), by nurses. About 1 mother in 10 found help through books or magazine articles. Usually this was in addition to instruction by word of mouth from doctor or nurse, but 2 per cent of the mothers relied upon literature alone. (Table XV.)

Native mothers sought advice and instruction more frequently than foreign-born mothers. Only 25 per cent of the native white mothers had no instruction in prenatal care from doctor, nurse, or literature; 84 per cent of the foreign born were without such instruction. The foreign-born woman is much less likely to seek out physician or trained nurse inasmuch as she relies in the New World as in the Old upon the services of a midwife or upon the advice of neighbors, relatives, and friends.³⁹ The same tendency holds with reference to prenatal care. Less than 1 per cent of the foreign-born mothers had Grade A care while 7 per cent of the native mothers secured the best grade of supervision. Approximately seven-eighths of the foreign born had no medical care whatsoever, while but one-fourth of the native white mothers suffered such complete lack.⁴⁰ From the point of view of maternal mortality it is significant that all three of the deaths from causes connected with pregnancy and confinement were deaths of foreign-born mothers who, as already stated, had no prenatal care.

Where no widespread system of free maternity care and instruction is operative, it may be expected that the size of the family income will influence more or less the extent to which mothers in different income groups will aspire to prenatal instruction and care and be able to satisfy their desires.

When the family income, as represented by the chief breadwinner's earnings, was under \$1,050 per annum, only 14 per cent of the mothers had any prenatal instruction and only 12 per cent received any prenatal care. In the highest income group where annual earnings were \$1,850 or over, 65 per cent of the mothers had prenatal instruction and 62 per cent prenatal care. The intermediate group, with annual earnings of chief breadwinners \$1,050 but less than \$1,850, occupied a mid position also in the proportion of mothers securing prenatal instruction (34 per cent) and prenatal care (31 per cent). The mothers in the lowest earnings group having Grade A care during pregnancy constituted 1 per cent; in the mid-group, 2 per cent; and in the highest group, 7 per cent. The three maternal deaths from childbirth were of mothers in families with less than \$1,050 for a yearly income. All conditions of family and individual life are likely to be less favorable when the income is low; housing inferior, ignorance of sanitation and hygiene greater, and power to satisfy physical wants reduced.

³⁹ General Table 12, p. 103.

⁴⁰ General Table 13, p. 103.

TABLE XVIII.—Prevalence of prenatal care and instruction in prenatal care, by annual earnings of chief breadwinner; confinements in Gary in 1916.

Annual earnings of chief breadwinner.	Confinements in 1916 of mothers—												
	Total.	Receiving no prenatal care.		Receiving prenatal care.		Not reported whether care received.		Receiving no instruction in prenatal care.		Receiving instruction in prenatal care.		Not reported whether instruction received.	
		Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹
Total.....	*1,376	966	70.2	*406	29.5	4	0.3	924	67.2	451	32.8	1	0.1
Under \$1,050.....	392	345	88.0	46	11.7	1	0.3	337	86.0	55	14.0	.....	.....
\$1,050, under \$1,850	721	499	69.2*	221	30.7	1	0.1	473	65.6	248	34.4	.....	.....
\$1,850 and over.....	185	69	37.3	115	62.2	1	0.5	64	34.6	121	65.4	.....	.....
No earnings, no chief breadwinner, and not reported.	78	53	.....	24	.....	1	.....	50	.....	27	.....	1	.....

¹ Not shown where base is less than 100.

* Includes 17 confinements which resulted in twin births, and 5 instances where mother had two confinements in 1916.

* Of the 33 instances of adequate care included here, 4 were in the earnings group "under \$1,050," 14 in "\$1,050, under \$1,850," 13 in "\$1,850 and over," 2 in "earnings not reported."

CARE DURING CONFINEMENT PERIOD.

Attendant at birth.

The foreign-born mother, it has been seen, secured much less help and supervision from physicians during pregnancy than did the native white mother. For confinement care her custom was to resort to the help of a midwife rather than to engage a physician to attend her. The reasons for this preference for the midwife doubtless included, besides the desire for a woman attendant at confinement, appreciation of the greater amount of nursing service and household help which the midwife rendered in conjunction with the lower fee which she charged. Slightly more than seven-tenths of the mothers of foreign birth had no attendant other than a midwife. Fifty-one others (5 per cent) had both a midwife and a physician, the latter having been called in usually because labor had been long or difficult or because the confinement presented complications. Among the native white mothers but 13 per cent had no attendant except a midwife, and 3 per cent had both physician and midwife. The proportion of native white mothers who were attended by physicians approximated nine-tenths while the proportion of foreign-born mothers attended by physicians but slightly exceeded two-tenths. Hospital confinements constituted 22 per cent of the total among the native white, and but 4 per cent among the foreign born. As a group, therefore, the foreign born had confinement care which was less skilled and much less capable of meeting successfully any abnormal conditions which might arise during, or immediately following, delivery.

TABLE XIX.—Attendant at confinement and time of arrival of attendant, by color and nativity of mother; confinements in Gary in 1916.

Attendant and time of arrival, and place of confinement.	Confinements in 1916.						
	Total.		Nativity of mother.				Negro. ¹
			Native white.		Foreign-born white.		
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	1,376	100.0	392	100.0	972	100.0	12
Confinement in hospital.....	125	9.1	87	22.2	35	3.6	3
Physician.....	120	8.7	86	21.9	31	3.2	3
Midwife.....	2	0.1	1	0.3	1	0.1	.....
Physician and midwife.....	3	0.2	.....	.....	3	0.3	.....
Confinement not in hospital.....	1,251	90.9	305	77.8	937	96.4	9
Physician only.....	393	28.6	242	61.7	146	15.0	5
On time.....	381	27.7	234	59.7	143	14.7	4
Late.....	12	0.9	8	2.0	3	0.3	1
Midwife only.....	751	54.8	51	13.0	699	71.9	4
On time.....	737	53.6	49	12.5	684	70.4	4
Late.....	16	1.2	2	0.5	14	1.4	.....
Not reported.....	1	0.1	.....	.....	1	0.1	.....
Other.....	32	2.3	2	0.5	30	3.1	.....
On time.....	30	2.2	2	0.5	28	2.9	.....
Late.....	2	0.1	.....	.....	2	0.2	.....
Physician and midwife.....	58	4.2	10	2.6	48	4.9	.....
Both on time.....	55	4.0	9	2.3	46	4.7	.....
Midwife on time, physician late.....	3	0.2	1	0.3	2	0.2	.....
No attendant.....	14	1.0	.....	.....	14	1.4	.....

¹ Per cent not shown where base is less than 100.

² Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

One per cent of the physicians and 1 per cent of the midwives summoned to attend mothers reached the mothers only after delivery but in time to perform part of the services required, namely, delivery of the placenta or tying and cutting the cord. A small number of physicians (13) were not able to reach the mothers in time to render any of these services.

Thirty-two mothers (2 per cent) had for attendant a relative, neighbor, or friend, sometimes pressed into service because labor was so short no professional help could be secured, sometimes because either mother or father thought professional services a needless expenditure. One father, for example, said he became disgusted with doctors during his wife's earlier pregnancies because she went to them for little headaches, the doctors did nothing, and he always had big bills to pay. This father, however, after delivering the mother himself, sent for a doctor when the baby was 7 hours old, upon the advice of a fellow section hand, to make sure everything was all right. He also stayed home from work 12 days to care for the mother. Fourteen women (1 per cent) had no attendant of any kind at confine-

ment, but did everything for themselves. In a few of these cases the birth occurred so quickly that the attendant was unable to reach the mother before delivery. In some cases the mother was alone and could not send for help and in others no effort was made to procure assistance though the father was at home. (Table XIX.)

Since slightly more than seven-tenths of the 1,371 mothers considered were born outside the United States, most of them in countries where it is customary to employ midwives at confinement, it is not surprising that about six-tenths of all the mothers were delivered by midwives. As might be expected, Gary with its large foreign population had a number of midwives. The Indiana State medical law, passed in 1897, provides a State board of medical registration and examination. According to the law which went into effect in 1899, an applicant for a certificate to practice midwifery in the State was required to present a duly attested diploma from an obstetrical school approved by the board or to pass a satisfactory examination. A midwife who had been practicing in the State 10 years preceding 1897 might secure a certificate to continue her vocation by submitting affidavit prior to July 11, 1899. No provision had been made for the supervision of midwives after certification.⁴¹

The official register of midwives licensed to practice in the State in 1916 did not contain the names of 17 who attended some of the births in Gary in 1916. The number of mothers who were attended by unlicensed midwives was only approximately 5 per cent of those who had midwife attendants. If to these mothers are added those who reported a midwife attendant but failed to disclose her name, the percentage, though doubled, is still low. No unlicensed midwife attended any large number of births; usually she had taken charge of but a single confinement. On the whole, then, it appears that the State law was functioning in Gary to such an extent that in 90 per cent of the 817 confinements attended by midwives in 1916 the attendant midwives had been licensed to practice. Nearly half the births attended by unlicensed midwives were not registered, while of those attended by licensed midwives, 89 per cent were registered, a showing only slightly below the percentage of registered births among those attended by physicians.

Postnatal care has been classified into grades A, B, C, and D on the basis of the number of visits made by the attendant subsequent

⁴¹ The examination fee was fixed at \$10; at the time of this study, 1916, the examination might be written in whatever language the applicant desired but an additional \$10 fee was required for translation. By 1919 the privilege of using any language but English had been withdrawn and a possible source of deception done away with. Indiana, Acts of 1897, p. 255, as amended; Burns' Annotated Statutes 1914, secs. 8401 to 8408.

to the visit at delivery and the period of time covered by them. For the highest grade of care (grade A) it was necessary that the attendant make at least daily visits through the fifth day of the lying-in period, and call again the seventh or eighth day, and once more on the tenth or eleventh day, giving a minimum of seven visits. The lowest grade required merely one visit besides the visit at delivery. Grades B and C are intermediate.

Of the 517 babies whose mothers were attended by physicians only 30 per cent received grade A, 34 per cent grade B, 26 per cent grade C, and 6 per cent grade D care. For mothers of 763 babies where a midwife was the only attendant, the postnatal care was distributed as follows through the different grades: Grade A, 26 per cent; B, 71 per cent; C, 2 per cent; D, three-tenths of 1 per cent. When a physician and midwife both attended the delivery the after care during the confinement period suffered, probably because neither attendant felt undivided responsibility. Of the 66 babies born to mothers who had 2 attendants (doctor and midwife), 25 were to mothers to whom no return visits were made; and among the different grades of care the largest number (15) fell into grade D.⁴² The figures just cited show the midwife custom in caring for mother and baby. Usually for 7 or 8 consecutive days after delivery the midwife makes a daily visit during which she gives nursing service to both mother and child.

The final examination of a maternity patient 4 to 6 weeks after delivery is coming to be recognized as one of the standards of good practice which an obstetrical attendant should meet.⁴³ Of the mothers who bore babies in Gary in 1916, 1,215 (or 88 per cent) had no such final examination from attendant physician or midwife; 54 mothers (4 per cent) who were attended by physicians received examinations 4 weeks or more after delivery; an additional 13 (about 1 per cent) received examinations before their physicians discharged them, but were discharged less than a month after delivery. Fifty-two mothers (about 4 per cent) reported receiving final examinations from midwife attendants. In view of the midwife's more restricted obstetrical knowledge and training these examinations were undoubtedly less thorough than those given by physicians and afforded correspondingly less protection to the mothers.

⁴² General Table 14, p. 104.

⁴³ Minimum Standards for the Public Protection of the Health of Children and Mothers, p. 436; Standards of Child Welfare, Children's Bureau Publication, No. 60.

TABLE XX.—Final examination of mother by attendant before discharge; confinements in Gary in 1916.

Final examination of mother by attendant before discharge.	Total confinements in 1916.	
	Number.	Per cent distribution.
Total.....	1,376	100.0
No examination.....	1,251	90.9
Physician or midwife attending.....	1,215	88.3
No physician or midwife attending.....	36	2.6
Examination by physician.....	67	4.9
4 weeks or more after delivery.....	54	3.9
Less than 4 weeks after delivery.....	13	0.9
Examination by midwife.....	52	3.8
Not reported whether examination made.....	6	0.4

¹ Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

Nursing care.

The kind and extent of nursing care given a mother during the lying-in period are extremely important. The mothers of about one-tenth of the babies born in 1916 were cared for in hospitals, and a similar group was cared for by trained nurses at home. The mothers of 7 per cent of the infants were cared for by practical or student nurses; those of a little over a fifth of the babies were dependent upon untrained outsiders or members of the family; and in fully half the cases the mothers were dependent upon midwives for nursing care.

It has been noted that the training of attendants at birth among foreign-born women was usually inferior to that of attendants at confinements of the native mothers. The nursing service which foreign-born mothers had during the lying-in period was also of a less skilled type. Well over a third of the babies of native mothers and only about an eighth of those of foreign mothers were born in hospitals or in homes where a trained nurse was employed for the confinement period. Midwife care was the highest type of nursing service received by two-thirds of the foreign-born and by only one-tenth of the native white mothers.

TABLE XXI.—Kind of nursing care received by mother during lying-in period, by nativity of mother; births in Gary in 1916.

Kind of nursing care during lying-in period.	Births in 1916 to—					
	All mothers.		Native mothers.		Foreign-born mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	1,393	100.0	4,406	100.0	987	100.0
Hospital.....	130	9.3	92	22.7	38	3.8
Trained nurse.....	146	10.5	61	15.0	85	8.6
Midwife.....	711	51.0	42	10.3	669	67.8
Practical or student nurse.....	101	7.3	75	18.5	26	2.6
Other (outsider).....	244	17.5	120	29.6	124	12.6
Other (member family).....	59	4.2	16	3.9	43	4.4
Not reported.....	2	0.1	.....	.....	2	0.2

¹ Includes 12 native negro mothers.

A difference similarly favorable to the native mother was found in the aggregate length of time which nursing care of any type covered. Of the foreign-born mothers, 57 per cent had ceased to have nursing care within 10 days after delivery; while 56 per cent of the native mothers received nursing care for two weeks or longer.⁴⁴

In progressing from the lower to the higher income groups, the amount of nursing care received by the mothers showed a steady increase. For example, nursing care lasting for two weeks or longer was received by the mothers of 30 per cent of the babies in the lowest earnings group, 40 per cent in the mid group and 58 per cent in the highest group. Conversely, when the income was low the mothers of 1 baby in 10 had nursing care less than a week as compared with 1 in 30 when the income was high.

TABLE XXII.—Duration of nursing care for mother, by annual earnings of chief breadwinner; births in Gary in 1916.

Annual earnings of chief breadwinner.	Births in 1916.										
	Total.	Duration of nursing care.									
		Less than 7 days.		7 days, less than 10.		10 days, less than 14.		14 days and over.		Duration not reported.	
		Num-ber. ¹	Per cent.	Num-ber.	Per cent. ¹	Num-ber.	Per cent. ¹	Num-ber.	Per cent. ¹	Num-ber.	Per cent. ¹
Total.....	1,393	2109	7.8	512	36.8	217	15.6	552	39.6	3	0.2
Under \$1,050.....	403	44	10.9	186	46.2	53	13.2	120	29.8	.....	.....
\$1,050, under \$1,850.....	727	55	7.6	260	35.8	121	16.6	289	39.8	2	0.3
\$1,850 and over.....	185	6	3.2	38	20.5	34	18.4	107	57.8	.....	.....
No earnings, no chief breadwinner, and not reported.....	278	4	.....	28	.....	9	.....	36	.....	1	.....

¹ Not shown where base is less than 100.

² Includes one infant whose mother died at childbirth, and one whose mother died four days after delivery.

³ Includes 6 births in families where there was no chief breadwinner and 11 in families where there were no earnings.

Days in bed and household help.

A minimum of 10-days' rest in bed after a normal delivery is commonly recommended by obstetricians and resumption of household duties is discouraged under a fortnight. Seven hundred and forty-six mothers (54 per cent) remained in bed less than 10 days after delivery. Native mothers are much more likely to observe 10 days as a requisite rest period following parturition than are foreign-born mothers. No native women in the group studied spent less than a day in bed after delivery, but two Polish and two Slovak mothers rested less than 24 hours following the birth of their babies. One-eighth of the foreign mothers were up within 4 days, more than

⁴⁴ General Table 15, p. 104.

one-fourth within a week, and only a third spent 10 days (the minimum recommended) or more, in bed. Three-fourths of the native white mothers, on the other hand, spent at least 10 days in bed following confinement.

TABLE XXIII.—*Number of days in bed following confinement, by color and nationality of mother; confinements in Gary in 1916.*

Color and nationality of mother.	Confinements in 1916.														
	Total.	Number days in bed following confinement.													
		Less than 1 day.		1 day, less than 4.		4 days, less than 7.		7 days, less than 10.		10 days, less than 14.		14 days and over.		Not reported.	
		Number.	Percent. ¹	Number.	Percent. ¹	Number.	Percent. ¹	Number.	Percent. ¹	Number.	Percent. ¹	Number.	Percent. ¹	Number.	Percent. ¹
Total.....	31,376	4 0.3	120 8.7	170 12.4	452 32.8	289 21.0	336 24.4	5 0.4							
Native white.....	392		4 1.0	15 3.8	75 19.1	183 46.7	115 29.3								
Foreign-born white.....	972	4 0.4	115 11.8	155 15.9	371 38.2	103 10.6	219 22.5	5 0.5							
Polish.....	272	2 0.7	45 16.5	58 21.3	84 30.9	15 5.5	67 24.6	1 0.4							
Serbian and Croatian.....	159		16 10.1	18 11.3	60 37.7	19 11.9	43 27.0	3 1.9							
Slovak.....	135	2 1.5	15 11.1	23 17.0	64 47.4	6 4.4	25 18.5								
All other.....	406		39 9.6	56 13.8	163 40.1	63 15.5	81 20.7	1 0.2							
Negro.....	12		1		0	3	2								

¹ Not shown where base is less than 100.

² Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

³ Includes 3 instances where the mother died as result of childbirth.

A mother may know that it is wise to rest the prescribed number of days after her baby's birth, yet believe that for her it is impracticable not to resume activities sooner. Mothers of 1,271 babies were confined at home; in only 4 cases did the mothers have no household help during the lying-in period, while the mothers of 1,252 babies had assistance with housework for at least part of the time after delivery. Mothers of 121 babies remained in bed less than 4 days after the babies' birth, although half of them had household help of some sort for a week or more. The mothers of all but 15 of these babies (12 per cent) were dependent upon the unpaid help of either a neighbor or member of the household, and accordingly might have felt obliged to get up as soon as possible. When, as in 9 cases, the mother stayed in bed less than 4 days in spite of the fact that hired help was kept from 1 to 4 weeks, it would appear that she herself had small regard for her own welfare and safety. For the most part, however, there seemed to be some relation between the length of time the mother rested in bed and the portion of the lying-in period during which she had help with her housework.⁴⁵

⁴⁵ General Table 16, p. 105

In approximately one-third of the homes there was paid household help during the confinement period, but it was customary both in homes of the native white and those of the foreign-born mothers for neighbors or members of the family to assume extra tasks while the mother was incapacitated. Paid assistance was relatively less frequent among foreign-born mothers, however, who also showed a tendency to dispense sooner with any additional help secured because of confinement. Almost half of the native white mothers kept household help for at least a month after delivery; almost half the foreign-born mothers, on the contrary, had help for less than two weeks, and the proportion among them keeping assistance for a month or longer was less than half that among native white mothers.⁴⁶

Family income apparently had some effect upon the length of time which the mother spent in bed after her baby's birth as well as upon the time she kept help with housework. More than three-fifths (65 per cent) of the mothers in families in which the chief breadwinners earned less than \$1,050 in a year observed less than the 10-day period in bed after delivery, and about one-half (51 per cent) had household help less than two weeks. When the income was \$1,850 or over, 36 per cent got up before the tenth day and only about one mother in six (16 per cent) had household help less than a fortnight.⁴⁷

⁴⁶ General Table 17, p. 106.

⁴⁷ General Tables 18 and 19, pp. 107, 108.

AGE OF MOTHER AND ORDER OF BIRTH.

A mother's age at the time her child is born may exert an influence over the infant's chance of survival. A very young mother suffers the disadvantages of physical immaturity, inexperience in the proper care of herself during pregnancy, and ignorance regarding the proper care of her baby. On the other hand, a woman who has borne many children may suffer physical disadvantages from repeated child-bearing although she may be able to counteract them by the knowledge which she has secured from experience and instruction.

The highest infant death rate in Gary in 1916 (187.1) was found among babies born to mothers less than 20 or to women 40 years of age or over.⁴⁸ Babies born to mothers in the twenties had the best likelihood of living 12 months, for the mortality rate among these children was only 106.7. The mortality rate for infants born to mothers in the thirties (132.3), while it showed a notable rise above the lowest rate, fell far short of the highest. The stillbirth rate also was lowest (2.2) among babies born to mothers in the twenties. The proportion of dead-born infants was highest (4.5 per 100), however, among the births to women in the thirties. Subdivision according to mother's nativity, though it renders the numbers too small to permit calculation of all the rates, shows that the trend in each nativity class is similar to that in the group as a whole.

TABLE XXIV.—*Infant mortality and stillbirth rates, by age and color and nativity of mother; births in Gary in 1916.*

Age of mother at birth in 1916 and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ^a
		Number.	Percent. ^a			
All mothers.....	1,393	40	2.9	1,353	169	124.9
Under 20 or 40 and over.....	143	4	2.8	139	26	187.1
20 to 29.....	824	18	2.2	806	86	106.7
30 to 39.....	396	18	4.5	378	50	132.3
Not reported.....	30	.....	.....	30	7	.....
Native white mothers.....	394	11	2.8	383	37	96.6
Under 20 or 40 and over.....	b 57	2	.....	55	10	.....
20 to 29.....	241	6	2.5	235	18	76.6
30 to 39.....	96	3	.....	93	9	.....
Foreign-born white mothers.....	987	28	2.8	959	128	133.5
Under 20 or 40 and over.....	c 83	2	.....	81	15	.....
20 to 29.....	578	12	2.1	566	66	116.6
30 to 39.....	296	14	4.7	282	40	141.8
Not reported.....	30	.....	.....	30	7	.....
Negro mothers.....	12	1	.....	11	4	.....
Under 20 or 40 and over.....	3	.....	.....	3	1	.....
20 to 29.....	5	.....	.....	5	2	.....
30 to 39.....	4	1	.....	3	1	.....

^a Not shown where base is less than 100.

^b Includes 46 to mothers under 20.

^c Includes 50 to mothers under 20.

⁴⁸ In other studies both the groups "under 20" and "40 and over" showed high rates; the groups are combined in this report on account of the small number of cases.

Two hundred and fifty-eight babies were born as the result of first pregnancies. Of these births, 8 per cent, according to the mothers' statement, were premature, a proportion higher than was found to obtain for any succeeding pregnancy. First births to women under 20 years of age formed about a fourth (26 per cent) of the total first births, but included almost half the first pregnancies which terminated at less than normal term.

Of all births in 1916 to mothers under 20 or 40 years of age or over, 1 in 10 was reported to have occurred prematurely; of births to mothers in the twenties, 1 in 22; and of those to mothers in the thirties, 1 in 28.⁴⁹

The 53 babies born at less than full term—less than 4 per cent of the live births—contributed 36, or 21 per cent, to the total of 169 infant deaths. If all the babies in Gary had been born at full term the infant mortality rate would have been reduced from 124.9 to 101.6, or nearly one-fifth.

TABLE XXV.—*Infant mortality and stillbirth rates, by period of gestation; births in Gary in 1916.*

Period of gestation.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ¹
		Number.	Per cent. ¹			
Total.....	1,393	40	2.9	1,353	169	124.9
Under 7 months.....	11	.....	.....	11	11	.....
7 months, under 8.....	26	7	.....	19	11	.....
8 months, under 9.....	29	6	.....	23	14	.....
9 months and over.....	1,326	27	2.0	1,299	132	101.6
Not reported.....	1	.....	.....	1	1	.....

¹ Not shown where base is less than 100.

Infants born of first pregnancies had a mortality rate of 140.6; second born 104.3; third born 104.8. For fourth born the rate rose to 142 but sank to 115.1 for children fifth in order of birth. Babies born of sixth or later pregnancies had a rate of 142.3. The still-birth rate was high for first pregnancies (3.5), although it was exceeded by the rate, 4.4, secured when sixth and later pregnancies were combined.

Infant mortality rates by order of birth to native white and to foreign-born mothers showed substantially the same trend. In interpreting the differences, however, between the infant mortality rates for all babies of native white mothers (96.6) and for all infants of foreign-born mothers (133.5), the higher proportion of first births

⁴⁹ General Table 20. p. —.

TABLE XXVI.—*Infant mortality and stillbirth rates, by order of pregnancy and color and nativity of mother; births in Gary in 1916.*

Order of pregnancy and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ¹
		Number.	Percent. ¹			
All mothers.....	1,393	40	2.9	1,353	169	124.9
Order of pregnancy:						
First.....	258	9	3.5	249	35	140.6
Second.....	285	7	2.5	278	29	104.3
Third.....	253	5	1.9	248	26	104.8
Fourth.....	182	6	3.3	176	25	142.0
Fifth.....	140	1	0.7	139	16	115.1
Sixth and later.....	272	12	4.4	260	37	142.3
Not reported.....	3			3	1	
Native white mothers.....	394	11	2.8	383	37	96.9
Order of pregnancy:						
First.....	120	5	4.2	115	15	130.4
Second.....	107	2	1.9	105	8	76.2
Third.....	64	2		62	3	
Fourth.....	31			31	4	
Fifth.....	26			26	1	
Sixth and later.....	46	2		44	6	
Foreign-born white mothers.....	987	28	2.8	959	128	133.5
Order of pregnancy:						
First.....	134	3	2.2	131	19	145.0
Second.....	174	5	2.9	169	20	118.3
Third.....	188	3	1.6	185	23	124.3
Fourth.....	149	6	4.0	143	20	139.9
Fifth.....	114	1	0.9	113	15	132.7
Sixth and later.....	225	10	4.4	215	30	139.5
Not reported.....	3			3	1	
Negro mothers.....	12	1		11	4	
Order of pregnancy:						
First.....	4	1		3	1	
Second.....	4			4	1	
Third.....	1			1		
Fourth.....	2			2	1	
Sixth and later.....	1			1	1	

¹ Not shown where base is less than 100.

and of births to young mothers among the infants in the native white group should be borne in mind. Fourteen per cent of the babies of foreign-born mothers as compared with 31 per cent of those of native white mothers were first-born children; 5 per cent of the babies of foreign-born mothers as compared with 12 per cent of those of native white mothers were born to mothers when under 20 years of age. (Tables XXIV and XXVI.) The unfavorable tendencies which attached to first births and to births to young mothers as shown in this study tended to raise slightly the mortality rate for babies of native white mothers as compared with the rate for babies of foreign-born mothers.

INTERVAL BETWEEN BIRTHS.

Births other than first births comprised 1,135 (82 per cent) of the total. The rapidity with which pregnancy succeeds pregnancy and birth follows birth is a factor influencing infant mortality. One birth in 10 in Gary came within 15 months after its immediate predecessor, and 1 in 5 occurred after an interval of less than 18 months. The infant mortality rate among babies born within 15 months after their mothers' previous confinement was 169.1, a rate considerably in excess of even that for children of first pregnancies. When the interval between births stretched into two years or more the infant mortality rate fell to 102.8. Among the native white mothers 6 per cent of the births came within the shortest interval; foreign-born mothers bore 12 per cent of their babies less than 15 months after a previous pregnancy had terminated. The lowest infant mortality rate among babies of native white as among those of mothers of foreign birth occurred when the period between the last two confinements was at least two years in length. The very low rate for this interval among infants of native white mothers (62.9) deserves notice.

TABLE XXVII.—*Infant mortality and stillbirth rates, by interval from preceding confinement and color and nativity of mother; births in Gary in 1916.*

Interval from preceding confinement and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ¹
		Number.	Per cent. ¹			
All mothers.....	1,393	40	2.9	1,353	169	124.9
No preceding confinement.....	258	9	3.5	249	35	140.6
Under 15 months.....	139	3	2.2	136	23	169.1
15 months, under 18.....	142	6	4.2	136	17	125.0
18 months, under 24.....	309	5	1.6	304	30	128.3
24 months and over.....	622	16	3.1	606	52	102.8
Interval not reported.....	23	1	.....	22	3	.....
Native white mothers.....	394	11	2.8	383	37	96.6
No preceding confinement.....	120	5	4.2	115	15	130.4
Under 15 months.....	23	.....	.....	23	4	.....
15 months, under 18.....	36	1	.....	35	3	.....
18 months, under 24.....	65	1	.....	64	6	.....
24 months and over.....	147	4	2.7	143	9	62.9
Interval not reported.....	3	.....	.....	3	.....	.....
Foreign-born white mothers.....	967	28	2.8	939	128	133.5
No preceding confinement.....	134	3	2.2	131	19	145.0
Under 15 months.....	115	3	.....	112	19	169.6
15 months, under 18.....	105	5	4.8	100	13	130.0
18 months, under 24.....	240	4	1.7	236	32	135.6
24 months and over.....	373	12	3.2	361	42	116.3
Interval not reported.....	20	1	.....	19	3	.....
Negro mothers.....	12	1	.....	11	4	.....
No preceding confinement.....	4	1	.....	3	1	.....
Under 15 months.....	1	.....	.....	1	.....	.....
15 months, under 18.....	1	.....	.....	1	1	.....
18 months, under 24.....	4	.....	.....	4	1	.....
24 months and over.....	2	.....	.....	2	1	.....

¹ Not shown where base is less than 100.

In Table XXVIII births have been grouped according to the annual earnings of the chief breadwinner in the family and the interval since the preceding confinement. The lowest earnings group, which had less than \$1,050 per annum, contained the smallest percentage (15 per cent) of children born as the result of first pregnancies; it comprised the largest proportion (12 per cent) of infants born less than 15 months after an earlier issue. In the highest earnings group 22 per cent of the births were first issues; only 6 per cent came at less than a 15-month interval from preceding births. Lowest, mid, and highest groups had a practically similar proportion of births coming at an interval of at least 18 months.

TABLE XXVIII.—Interval from preceding confinement, by annual earnings of chief breadwinner; births in Gary in 1916.

Interval from preceding confinement.	Births in 1916.								
	Total.		Annual earnings of chief breadwinner.						No earnings, no chief breadwinner, and not reported. ¹
			Under \$1,050.		\$1,050 and under \$1,850.		\$1,850 and over.		
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	1,393	100.0	403	100.0	727	100.0	185	100.0		* 78
No preceding confinement.....	258	18.5	60	14.9	147	20.2	41	22.2	10
Under 15 months.....	139	9.9	50	12.4	69	9.5	11	5.9	9
15 months, under 18.....	142	10.2	38	9.4	81	11.1	19	10.3	4
18 months, under 24.....	309	2.2	87	21.6	164	22.6	38	20.5	20
24 months and over.....	522	37.5	158	39.2	259	35.6	74	40.0	31
Not reported.....	23	1.7	10	2.5	7	1.0	2	1.1	4

¹ Per cent not shown where base is less than 100.

² Includes 6 births in families where there was no chief breadwinner and 11 in families where there were no earnings.

PLURAL BIRTHS.

Among the 1,353 live births in Gary in 1916 were 33 twins, of whom but 15 survived a year; 1 twin was stillborn. Infant mortality among twins is very high, and the child who is the product of a single birth has a much greater expectancy of living a year than has a child who is one of twins. To all the mothers in the city for whom complete maternity histories were secured, 100 live-born twins had come. Of these, 46 died in infancy, making the mortality rate for plural births 460, a rate eloquently expressive of the added hazard to which a child born a twin is subjected. The influence of the mortality rate among plural births in Gary in 1916 is shown by comparing the mortality rate for single births (114.4) with that for live births (124.9), in which are included plural issues as well. Plural births added but 33 to the 1,353 live births and yet contributed 18 of the 169 infant deaths.

One per cent of the live births to native mothers and 3 per cent of those to foreign-born mothers were twins. Comparison of the infant mortality rates for single births in the two nativity groups—native white 92.3, foreign born 120.4—and the rates for all births, inclusive of plural—native white 96.6, foreign born 133.5—reveals that a part of the difference was due to the influence which the larger proportion of plural births exerted upon the mortality rate among infants with foreign-born mothers.

TABLE XXIX.—*Infant mortality rates for single and plural births, by color and nativity of mother; births in Gary in 1916.*

Single or plural birth and color and nativity of mother.	Total births.	Still-births.	Live births.	Infant deaths.	Infant mortality rate. ¹
All mothers.....	1,393	40	1,353	169	124.9
Single births.....	1,359	39	1,320	151	114.4
Plural births.....	34	1	33	18	.....
Native white mothers.....	394	11	383	37	96.6
Single births.....	390	11	379	35	92.3
Plural births.....	4	.....	4	2	.....
Foreign-born white mothers.....	987	28	959	128	133.5
Single births.....	957	27	930	112	120.4
Plural births.....	30	1	29	16	.....
Negro mothers.....	12	1	11	4	.....
Single births.....	12	1	11	4	.....

¹ Not shown where base is less than 100.

SEX.

Vital statistics show, almost invariably, a preponderance of male over female births and an infant mortality rate among males which is in excess of that for females. In the birth-registration area in 1916, for example, for every thousand live-born girl babies there were 1,057 live-born male infants. The males died in infancy at the rate of 111 per 1,000; the females, at 90 per 1,000.⁵⁰ The figures for births and infant deaths in Gary are in practical conformity with this general experience. There were 659 female and 694 male live births; the infant mortality rate for girl babies was 115.3, while for boy babies it was 134.0. Male births exceeded female both among native white and foreign-born mothers. Among infants of native mothers the mortality rate for males very greatly outran the death rate of females; among infants of foreign-born mothers the rate for males fell slightly below that for females.

TABLE XXX.—*Infant mortality rates, by sex of infant and color and nativity of mother; births in Gary in 1916.*

Sex of infant and color and nativity of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate, ^a
All mothers.....	1,393	1,353	169	124.9
Male.....	721	694	93	134.0
Female.....	672	659	76	115.3
Native white mothers.....	394	383	37	96.6
Male.....	204	196	25	127.6
Female.....	190	187	12	64.2
Foreign-born white mothers.....	987	959	128	133.5
Male.....	512	494	65	131.6
Female.....	475	465	63	135.5
Negro mothers.....	12	11	4	.....
Male.....	5	4	3	.....
Female.....	7	7	1	.....

^a Not shown where base is less than 100.

⁵⁰ U. S. Bureau of the Census, Birth Statistics, 1916, p. 16.

INCOME.

Family income has been shown to be one of the most significant environmental factors influencing infant life. Prolonged inadequacy of income ushers in poverty with its attendant evils—insufficient food and clothing, poor housing and sanitation, lessened ability to secure proper medical care and attention, and increased need for the mother to seek gainful employment to add to the earnings of the natural breadwinner in the family. Consequently, the part which adequacy of income plays in governing the new-born child's chance to survive should not be minimized.

EARNINGS OF CHIEF BREADWINNER.

Financial responsibility for the family is usually assumed by the father. In determining the economic status of families, therefore, the father's annual earnings constitute perhaps the best index of the standard of living of the family. In 98 per cent of all the families into which babies were born in Gary in 1916, fathers were the chief breadwinners. A few families (2 per cent), however, by reason of the father's death, desertion, or incapacity were dependent upon the earnings of some other member who took up the responsibility for the maintenance of the home. In these families classification has been made, accordingly, on the basis of the annual earnings of the chief breadwinner, that is, the person upon whom the baby and the family were mainly dependent for financial support.^{60a} The calendar year 1917 was chosen as the year to which the annual earnings relate, on the ground that the amount of the earnings could be more accurately and easily secured for this period (which corresponded with the year for which incomes are commonly reported for tax purposes) than for the precise 12 months following the birth of the infant in 1916. The earnings for this period doubtless afford as fair a basis for classification of families into income groups as the earnings for the year following the birth. All reports of earnings, therefore—those of chief breadwinner, other supplementary earnings, and the monetary contribution of mothers through gainful employment—pertain to the calendar year 1917.

Ordinarily, income from supplementary sources was less regular and more difficult to secure accurately than the chief breadwinner's

^{60a} In the tabulations, the mother was never classified as chief breadwinner, and if no person other than the mother assumed financial responsibility for the family it was considered as having no chief breadwinner. General Table 24 shows the proportion of mothers in each nationality group who were employed, and the relation of mothers' employment to earnings of chief breadwinners.

earnings. The majority of mothers who worked kept lodgers and could state the gross receipts only. The gainful employment of the mother usually indicated a need for supplementing the father's wage, but whether she worked at home or in the factory, the fact that the time and service she could give to home and children were necessarily lessened, tended to offset the benefit from the addition made to the family resources. Income from investments, on the contrary, was found usually where the chief breadwinner's earnings were in themselves sufficient to meet the needs of the family; not only was the amount of net income difficult to obtain, but in these cases the earnings alone usually furnished a fair indication of the standard of living.

The chief breadwinners for 29 per cent of the babies earned less than \$1,050 in a twelvemonth; for an additional 52 per cent their annual earnings reached \$1,050 but fell below \$1,850. The proportion of babies of foreign-born mothers in families where the chief breadwinner's earnings were below \$1,050 was 3½ times as great as the proportion among babies of native white mothers. The proportion of babies of native white mothers in families where the chief breadwinner's annual earnings were \$1,850 or over was more than 3 times as large as the proportion among babies of foreign-born mothers. Slightly over one-fourth of the babies of native white mothers, as compared with less than one-twelfth of those of foreign-born mothers, had chief breadwinners whose yearly earnings equaled or exceeded \$1,850.

TABLE XXXI.—Annual earnings of chief breadwinner, by color and nativity of mother; births in Gary in 1916.

Annual earnings of chief breadwinner.	Births in 1916 to—							
	All mothers.		Native white mothers.		Foreign-born white mothers.		Negro mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution. ¹
Total.....	1,393	100.0	394	100.0	987	100.0	12	.....
Under \$1,050.....	403	28.9	41	10.4	358	36.3	4	.....
\$1,050, under \$1,850.....	727	52.2	225	57.1	495	50.1	7	.....
\$1,850 and over.....	185	13.3	104	26.4	80	8.1	1	.....
No earnings, no chief breadwinner and not reported...	78	5.6	24	6.1	54	5.5	.....	.....

¹ Not shown where base is under 100.
² Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

SUPPLEMENTARY EARNINGS.

Nearly two-thirds (64 per cent) of the families had no earnings besides those of the chief breadwinner. If the families are classified according to the earnings of all members of the family, the income group under \$1,050 embraces only 23 per cent of the entire number,

the mid group contains 53 per cent and the highest group 18 per cent, instead of 29, 52, and 13 per cent, respectively, when the families are classified according to the earnings of the chief breadwinner.⁵¹

The proportion of families in which the chief breadwinner's earnings were not supplemented varied according to the amount of the breadwinner's contribution. When his earnings were below \$1,050, 56 per cent of the babies were found in families which had no supplementary earnings; in the next higher income group, 67 per cent; in the highest, 72 per cent. In short, the more adequate the chief breadwinner's earnings, the smaller the tendency, the less the need to add to them by the earnings of other members of the family. Mothers were less likely to be gainfully employed if the chief breadwinner's earnings were high, though even in the highest income group 29 per cent of the mothers were employed. In the lowest income group the percentage was 41.⁵²

MOTHER'S EMPLOYMENT AND EARNINGS.

Slightly over one-third of the 1,393 babies born in 1916 had mothers who were gainfully employed during all, or part, of the year 1917. By far the largest proportion of these mothers (86 per cent) were engaged in keeping lodgers. Since in these cases it was impossible to determine the expenditures incidental to furnishing room and board, or to secure a statement of net income, the gross earnings usually represented considerably more than the real addition made to the family resources. Of the mothers gainfully employed 47 per cent earned less than \$200 in the year, 40 per cent earned \$200 or over, while in 12 per cent of the cases earnings were not reported. Gainful employment was a little more common among foreign-born than among native white mothers. Likewise the proportion of foreign-born mothers who kept lodgers (32 per cent) exceeded the proportion of native white mothers (24 per cent).⁵³

Employment of mothers outside the home was not of frequent occurrence in Gary. Steel, the chief industry of the city, did not afford many openings for women outside the clerical positions and in few factories in the other industries was woman labor common.

A special inquiry was made into the question of the relation between infant mortality and gainful employment of the mother within one year after the birth in 1916. If a mother is gainfully employed only after her baby dies, the baby's death obviously can not be ascribed in any way to that employment. But if a mother's employment takes her away from the child or lessens the care she can give him, the infant's chance of life may be lessened. The mothers of 391 infants (28.9 per cent) commenced or resumed gainful work

⁵¹ General Table 23, p. 111.

⁵² General Table 24, p. 111.

⁵³ General Table 25, p. 112.

during their babies' lifetime and before the babies' first birthdays. In the overwhelming majority of these cases (91.6 per cent), however, the mother's work was in her own home and consisted for the most part of keeping lodgers or boarders; in only 33 cases did the mother's work take her out of the home, and in only 25 of these did it result in separation of mother and baby.

The effect upon infant mortality of the mother's gainful employment during the year after the infant's birth may be shown by the following calculation. Among the entire group of 391 infants, 40 deaths occurred before the end of the first year of life, 2 of them among the infants whose mothers worked away from home. If the average monthly death rates for the city had prevailed among these infants from the time their mothers commenced or resumed work until the end of the year, only 33 deaths instead of 40 would have resulted. This difference, although suggestive of a greater mortality rate among infants of employed mothers, is hardly large enough to be conclusive. In general, gainful employment of the mother during the infant's lifetime was for the most part at home, and the mother's employment away from home after the birth in 1916 was a negligible factor in the city's infant mortality rate.

EMPLOYMENT OF CHIEF BREADWINNER.

As might be expected in a city in which the basic industry was steel, the greatest proportion of wage earners were employed in the steel mills. Gary, however, has had in its brief history a wholesome development of trade and commerce and other industries essential to steady growth as a community, with the result that a considerable number of its wage earners were employed outside the steel industry. Of the babies born in 1916, 87 per cent were in families having chief breadwinners who were wage earners, practically two-thirds of whom were connected with the production of steel. Of the infants of foreign-born mothers slightly over seven-tenths (71 per cent) were dependent upon workers in the steel mills. The proportion of babies of native white mothers whose chief breadwinners were employed in other industries than steel was more than double the proportion among babies of mothers born outside the United States.

A comparison of the earnings of employees in steel with those of employees in other industries shows for the most part a similar distribution among the three earnings groups. A slightly larger proportion of the wage earners in the steel industry were in the highest earnings group. The difference in earnings in favor of the steel industry was more marked in the foreign-born group. In the foreign-born group of wage earners in other industries than steel (47 per cent) had earnings of less than \$1,050, and only 1 per cent

had earnings of \$1,850 and over, as compared with 37 per cent and 7 per cent, respectively, of wage earners in the steel industry.⁵⁴

INFANT MORTALITY RATES AND EARNINGS OF CHIEF BREADWINNER.

Among the 392 live-born infants in the lowest earnings group 54 deaths under 1 year of age occurred, giving a mortality rate of 137.8; 90 out of the 708 babies in the mid group died under 12 months of age, making an infant mortality rate of 127.1; of the 179 in the highest income group, 16 died in infancy, establishing a mortality rate of 89.4 for the group which was best favored financially. In these figures appears again the coincidence between low income and high infant mortality rate which has so persistently recurred in the studies made by the Children's Bureau.⁵⁵

TABLE XXXII.—*Infant mortality rates, by annual earnings of chief breadwinner and color and nativity of mother; live births in Gary in 1916.*

Annual earnings of chief breadwinner and color and nativity of mother.	Total live births.	Infant deaths.	Infant mortality rate. ¹
All mothers.....	1,353	169	124.9
Under \$1,050.....	392	54	137.8
\$1,050, under \$1,850.....	708	90	127.1
\$1,850 and over.....	179	16	89.4
No earnings, no chief breadwinner and not reported.....	² 74	9	.....
Native white mothers.....	383	37	96.6
Under \$1,050.....	41	5	.....
\$1,050, under \$1,850.....	219	23	105.0
\$1,850 and over.....	100	6	60.0
No earnings, no chief breadwinner and not reported.....	23	3	.....
Foreign-born white mothers.....	959	128	133.5
Under \$1,050.....	348	48	137.9
\$1,050, under \$1,850.....	482	65	134.9
\$1,850 and over.....	78	9	.....
No earnings, no chief breadwinner and not reported.....	51	6	.....
Negro mothers.....	11	4	.....
Under \$1,050.....	3	1	.....
\$1,050, under \$1,850.....	7	2	.....
\$1,850 and over.....	1	1	.....

¹ Not shown where base is less than 100.

² Includes 5 instances of "no chief breadwinner" and 11 of "no earnings."

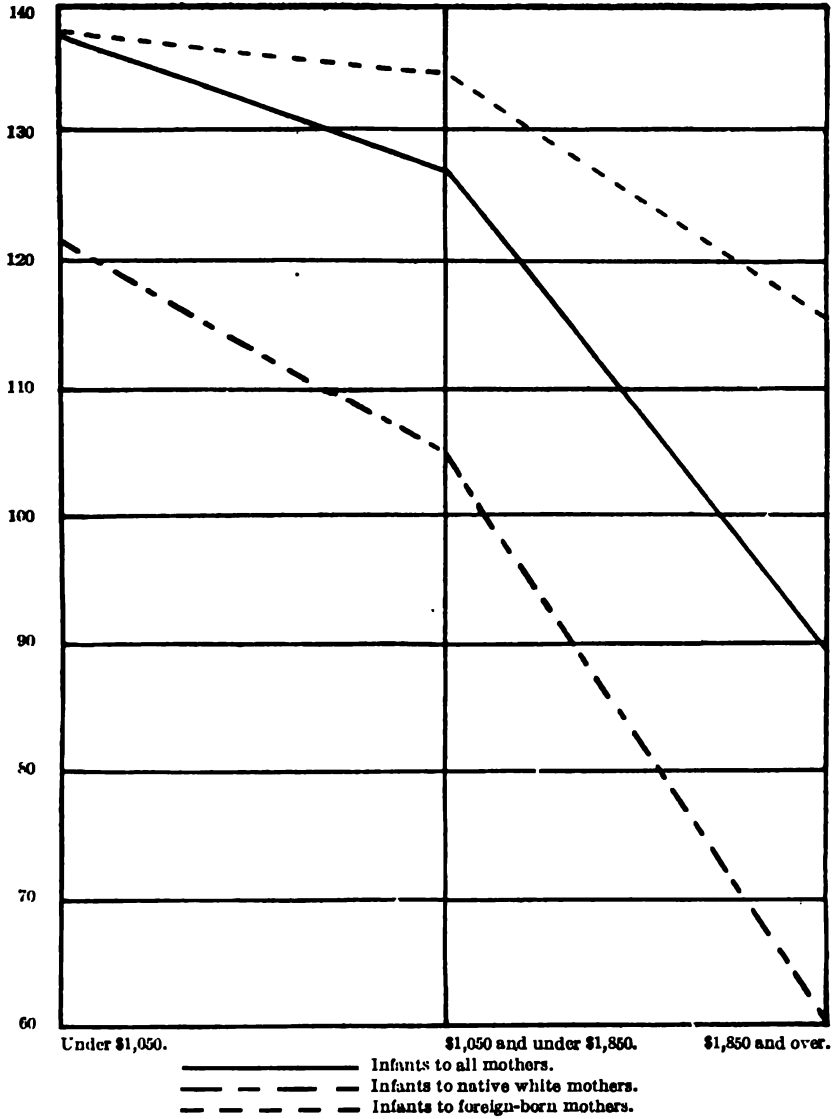
Division according to nativity of the mothers shows for each nativity class the same movement from higher to lower infant mortality rate with increase in the earnings of the chief breadwinner. Among the infants of native white mothers the rate in the highest earnings group (60.0) was a little less than half that in the lowest (121.9). The rates among babies of foreign-born mothers, though they do not fall so markedly, nevertheless display a steady descent as the breadwinner's earnings rise. (Chart III.)

⁵⁴ Percentages are based upon births.

⁵⁵ Save the Youngest, U. S. Children's Bureau Publication, No. 61, p. 15.

Infant mortality rate.

CHART III.—Infant mortality rates, by earnings of chief breadwinner.



NATIONALITY.

The 1910 Census, made four years after Gary was founded, showed that 49 per cent of the city's population was native white, a like proportion foreign born, and 2 per cent colored. Austria-Hungary, Russia, Italy, and Germany had contributed the largest quotas to the foreign-born population, though practically every European country was represented in the cosmopolitan body making up Gary's citizenship.⁶⁶ In 1916, 987 babies were born in Gary to foreign-born mothers of 28 distinct nationalities. The leading nationality groups in point of numbers were from the countries most largely represented in the city's population in 1910—Poles, Serbians and Croatians, Slovaks, Magyars, Italians, Lithuanians, and Germans.

TABLE XXXIII.—*Infant mortality and stillbirth rates, by color and nationality of mother; births in Gary in 1916.*

Color and nationality of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ¹
		Number.	Percent. ¹			
Total.....	1,393	40	2.9	1,353	109	124.9
Native white.....	394	11	2.8	383	37	96.6
Foreign-born white.....	987	28	2.8	959	128	133.5
Polish.....	275	12	4.4	263	39	148.3
Serbian and Croatian.....	162	4	2.5	158	20	126.6
Slovak.....	135	3	2.2	132	15	112.6
All other ²	415	9	2.2	406	54	133.0
Negro.....	12	1	.....	11	4	.....

¹ Not shown where base is less than 100.

² Including 64 Magyar, 60 Italian, 54 Lithuanian and Lettish, 41 German, 36 Rumanian, 24 Greek, 22 Great Russian, 20 Bohemian, 20 Danish, Swedish or Norwegian, 19 Ukrainian or Ruthenian, 14 Irish, 8 Slovenian, 7 Canadian (not French), 6 English, Scotch, Welsh, 6 Jewish, 5 Bulgarian, 3 Spanish, 2 Assyrian, 1 Dutch, 1 French, 1 Albanian, 1 foreign-born white, nationality unknown.

INFANT MORTALITY RATES BY NATIONALITY.

The contrast between the infant mortality rate for babies of native white mothers (96.6) and that for infants of foreign-born mothers (133.5) has already been noted. Only three nationality groups—Polish, Serbian and Croatian, and Slovak—were large enough to warrant the computation of infant mortality rates. The rate among the babies of Polish mothers (148.3) was greatly in excess of that for either of the other nationalities and notably higher than that for the babies of all foreign-born mothers. The stillbirth rate (4.4) was also high for the Polish group. Since births to these mothers constituted 28 per cent of the entire number of babies born to foreign women, the high infant death rate among babies of Polish mothers was undoubtedly strongly instrumental in raising the general infant mortality rate for babies of foreign-born mothers.

⁶⁶ Thirteenth Census of the United States, 1910, Vol. II, Population, p. 568.

NON-ENGLISH-SPEAKING NATIONALITIES.

With the exception of 20 births to mothers from the British Isles and seven infants whose mothers were of Canadian origin other than French, the foreign-born mothers belonged to non-English-speaking nationalities. Of the mothers of non-English-speaking nationalities 67 per cent were of the different Slavic races, and therefore possessed the racial customs, culture, and ideals characteristic of these races. Moreover, although Lithuanians, Rumanians, and Magyars—16 per cent of the non-English-speaking nationalities, as represented among the births in Gary in 1916—are not Slavic peoples and do not speak Slavic languages, nevertheless in customs and habits they have many points of resemblance to the Slavs. In Gary there was but little segregation of different nationalities into distinct colonies; a few blocks predominantly Polish had been dubbed "Little Poland," but Poles were living in other parts of the city as well. Certain subdivisions of Gary were chiefly foreign, as the South Side, or Tolleston, for example, but a single block, or even a single tenement in these subdivisions, might contain families of various nationalities living side by side.

In religious life, perhaps more than in social and economic custom, the different national groups held themselves distinct. There were Polish, Slovak, Croatian, Lithuanian, Magyar, Ruthenian, Rumanian orthodox, Russian orthodox, Italian, German, and Jewish congregations. Practically every nationality had, in addition, its societies, clubs, or associations for social, protective, fraternal, or educational purposes, and a person of almost any nationality could find without much search a store or bank wherein he could make his wants known in his native tongue.

On the other hand the very youthfulness of Gary, the general feeling there that change and growth were normal, could scarcely have failed to permeate even the most foreign sections and tend there also, to break down connections with the past and foster the adoption of new customs and ideas. To this was added the very real influence which the public schools of the city exerted, not only over the children attending them, but over the adults, the foreign-speaking men and women who enrolled in the manual training shops and night classes of the schools, who used the schools' swimming pools and baths as well as the instruction offered in English, cooking, sewing, foundry work, and other subjects.

MOTHERS' ABILITY TO SPEAK ENGLISH.

Of the 1,393 babies, 44 per cent were born to mothers unable to speak English. Inability to speak English was of significance so far as it might constitute a social and economic handicap, curtail a

mother's opportunity to use the community's medical, social, and educational resources to the fullest degree, or close to her ways of obtaining valuable information on the care of her home and children. The babies of Polish women had the highest proportion of mothers (83 per cent) who could not speak English; among the Serbians and Croatians the proportion was slightly less than three-fourths (74 per cent), while among the Slovaks only half the infants had mothers incapable of conversing in English. It is to be noted that the infant mortality rate was highest among babies of Polish mothers—the women least proficient in the English tongue—and that while the infant mortality rate for babies of mothers of non-English speaking nationalities was 134.8, when this group was subdivided further according to mother's ability to speak English, the mortality rate for infants whose mothers had not acquired the language was 145.2, whereas the rate for infants whose mothers had learned to use English was but 116.1. Apparently the mother's inability to speak English was found aligned with other forces inimical to infant life.

TABLE XXXIV.—*Infant mortality rates, by mother's ability to speak English, and color and nationality of mother; births in Gary in 1916 to foreign-born white mothers.*

Ability to speak English, and color and nationality of mother.	Total births.		Live births.	Infant deaths.	Infant mortality rate. ¹
	Number.	Per cent distribution.			
All foreign-born white mothers.....	987	.....	959	128	133.5
English-speaking nationalities.....	27	.....	24	2	.....
Non-English-speaking nationalities.....	960	100.0	935	126	124.8
Able to speak English.....	346	36.0	336	39	116.1
Unable to speak English.....	614	64.0	599	87	145.2
Polish.....	275	100.0	263	39	146.3
Able to speak English.....	47	17.1	45	8	.....
Unable to speak English.....	228	82.9	218	31	142.2
Serbian and Croatian.....	162	100.0	158	20	126.6
Able to speak English.....	43	26.5	41	4	.....
Unable to speak English.....	119	73.5	117	16	136.8
Slovak.....	135	100.0	132	15	113.6
Able to speak English.....	67	49.6	66	7	.....
Unable to speak English.....	68	50.4	66	8	.....
All other.....	388	100.0	382	52	136.1
Able to speak English.....	189	48.7	184	20	108.7
Unable to speak English.....	199	51.3	198	32	161.6

¹ Not shown where base is less than 100.

YEARS IN THE UNITED STATES.

Foreign-born mothers of slightly more than one-tenth of the babies had been in the United States less than five years. Since the nationalities found were chiefly from the countries of southeastern Europe, they were almost wholly of the "newer immigration" and displayed, but little individual differences in length of residence within the United States.

TABLE XXXV.—*Infant mortality rates, by years of residence of mother in the United States, and color and nationality of mother; births in Gary in 1916 to foreign-born white mothers.*

Years of residence in United States and color and nationality of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate. ¹
All foreign-born white mothers.....	987	950	128	133.5
Less than 5 years.....	108	107	17	158.9
5 years and over.....	872	845	111	131.4
Not reported.....	7	7		
Polish.....	275	263	39	148.3
Less than 5 years.....	22	21	6	
5 years and over.....	253	242	33	136.4
Serbian and Croatian.....	162	158	20	126.6
Less than 5 years.....	19	19	3	
5 years and over.....	143	139	17	122.3
Slovak.....	135	132	15	113.6
Less than 5 years.....	9	9	2	
5 years and over.....	122	119	13	109.2
Not reported.....	4	4		
All other.....	415	406	54	133.0
Less than 5 years.....	58	58	6	
5 years and over.....	354	345	48	139.1
Not reported.....	3	3		

¹ Not shown where base is less than 100.

One in 6 of the babies whose mothers had been in the United States less than 5 years and 1 in 8 of those whose mothers had been in this country for a longer period, died within 12 months after birth. Each of the 3 most numerous foreign nationality groups showed a lower infant mortality rate among the babies whose mothers had had a more extended residence within the United States. Besides making possible the acquisition of English and the methods of child care which are best suited to this country, lengthened residence also had a tendency to better the economic status of the family and thus to enhance the infants' likelihood of living beyond infancy. Length of residence was apparently a factor in reducing the mortality rate among infants of foreign-born mothers toward the level of the rate among infants of native mothers.

LITERACY OF MOTHER.

Only 2 native white mothers said they were unable to read and write. There were, however, 361 babies (37 per cent) whose foreign-born mothers could not read and write in any language. The percentage of illiteracy, gauged simply by the mother's statement as to her ability to read and write in any language, was greatest among the Serbian and Croatian women. Approximately two-fifths of the Polish mothers could not meet this crude test as to literacy. Among the Slovaks somewhat over one-fourth of the babies (27 per

cent) had illiterate mothers. When the numbers were not so small as to make the calculation of infant mortality rates undependable, the babies with mothers who could not read and write showed a higher mortality rate than did those whose mothers were literate. This was especially true in the case of Polish mothers.⁵⁷

Illiteracy, like inability to speak English, was of significance chiefly because it restricted the mother's opportunity to acquire knowledge by limiting her to the spoken word as the sole medium of instruction. The mother's illiteracy, furthermore, tended to be associated with ignorance and a lower economic level. Of the babies of illiterate mothers 24 per cent had chief breadwinners whose earnings totaled less than \$1,050 per annum, while 44 per cent of those infants whose mothers could not read and write had chief breadwinners in the lowest income group.⁵⁸

The proportion of illiteracy was less among the younger foreign-born mothers. Slightly over one-fourth of the mothers under 25 could not read and write, as compared with one-half of those 35 years of age and over.⁵⁹

⁵⁷ General Table 26, p. 113.

⁵⁸ General Table 27, p. 113.

⁵⁹ General Table 28, p. 114

MATERNITY HISTORIES.

In addition to the information gathered with special reference to the question of infant mortality among the babies born in Gary in 1916, mothers were asked to report the sequence, duration, and outcome of their earlier pregnancies as well, their ages at the time each successive birth occurred, and, for the children who had died, the causes of death and the children's ages at time of death. The data secured in maternity histories corroborate and supplement certain findings based on the data regarding infants born in 1916.

The 1,393 births in Gary in 1916 included in this study represented births to 1,371 mothers, since in 17 cases of confinement twins were born, and in 5 cases the mothers had been confined previously within the year. Twenty-two maternity histories were omitted because they were incomplete or included births out of wedlock. To the 1,349 mothers remaining, the total births, both live and still, of at least seven months' gestation numbered 4,714.

INFANT MORTALITY RATE.

Among the 4,572 children born alive to these 1,349 mothers 637 deaths under 12 months of age had occurred, making the infant mortality rate for all babies born to these mothers 139.3. This rate was considerably in excess of that (124.9) among babies born in 1916. The complete maternity histories contained a larger proportion of first births as well as a larger proportion of births to foreign-born mothers than did the 1,353 live births in the selected group. Because infant mortality among first births and among births to foreign-born mothers was high, a larger percentage of these among the births from all pregnancies would tend to raise the mortality rate.

TABLE XXXVI.—*Infant mortality and stillbirth rates, by color and nationality of mother; births from all pregnancies.*

Color and nationality of mother.	Total mothers.	Births, all pregnancies.					
		Total.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.
			Number.	Per cent. ^a			
Total.....	1,349	4,714	142	3.0	4,572	637	139.3
Native white.....	389	1,054	36	3.4	1,018	100	98.2
Foreign-born white.....	948	3,632	105	2.9	3,527	532	150.8
Polish.....	270	1,023	34	3.3	989	153	154.7
Serbian and Croatian.....	153	605	17	2.8	588	104	176.9
Slovak.....	129	515	12	2.3	503	68	135.2
Magyar.....	60	243	2	0.8	241	45	186.7
Italian.....	57	254	10	3.9	244	33	135.2
Lithuanian and Lettish.....	52	232	8	3.4	224	38	169.6
German.....	39	150	7	4.7	143	14	97.9
All other.....	188	610	15	2.5	595	77	129.4
Negro.....	12	28	1	.....	27	5	.....

^a Not shown where base is less than 100.

^b Excludes 19 mothers to whom there were illegitimate births prior to 1916 and 3 whose maternity history was incomplete or unreliable.

The mortality rate for all infants of native white mothers, 98.2, was but very slightly different from that, 96.6, for babies of these mothers in 1916. The rate for babies of foreign-born mothers, 150.8, on the contrary, was noticeably above the rate, 133.5, for babies of these mothers in the selected year. It is interesting to note that among the different nationalities, the mortality rate for babies of German mothers, 97.9, almost identical with that for infants of native white mothers, accompanied the highest stillbirth rate, 4.7; that the rate of 135.2 for all babies of Italian mothers accompanied a stillbirth rate of 3.9; whereas an identical rate, 135.2, among babies of Slovak mothers was attended by a stillbirth rate of only 2.3. The excessive infant mortality rate for babies of Magyar mothers, 186.7, was found coexistent with a very low stillbirth rate, 0.8. Other high rates were those for babies of Serbian and Croatian mothers (176.9), Lithuanian mothers (169.6), and Polish mothers (154.7).

AGE OF MOTHER AND ORDER OF BIRTH.⁶¹

Among all live births included in the maternity histories, the rate of mortality during the first year of life was greatest for babies of mothers under 20 and those 40 years of age or over (163.9), and least among babies whose mothers were in the twenties (129.9). The rate for infants born to mothers when in the thirties was intermediate (144.1). While the range of variation was not so extreme as in the corresponding rates among babies born in 1916 to mothers of these ages (see p. 41), the ranking was the same. The percentage of stillbirths (2.3) was lowest among births to mothers under 20 and those 40 or over and highest (4.5) among babies born to mothers in the thirties. Among babies born in the selected year the highest stillbirth rate fell likewise among births to women in the thirties; the lowest, however, was to mothers in the twenties.

Among all babies included in the complete maternity histories, infant mortality rates according to order of birth confirm the trend shown when births in 1916 alone were under consideration (p. 42). Infants born of first pregnancies had a high mortality rate of 147; the rate fell among second-born infants to 124.2; rose for the babies third in order of birth to 132.8; for fourth, to 151.1; sank to 142.9 for fifth-born infants; and increased slightly to 145.3 for those offspring of sixth and later pregnancies.

⁶¹ See General Table 29, p. 115.

INTERVAL BETWEEN BIRTHS.

Over seven-tenths of the total births to the 1,349 mothers followed an earlier pregnancy. Babies born within 15 months of the time when their mothers had been previously confined showed a mortality rate in their first year of 183.9; when the interval from a preceding birth lengthened to 15 but less than 18 months the mortality rate fell to 157.4. When at least two years elapsed between confinements the infant mortality rate sank to 99.5. This again parallels and confirms what held true among the births in 1916. About 1 in 8 of all births to foreign-born mothers came less than 15 months after a preceding pregnancy had terminated; among all births to native white mothers approximately 1 in 14 occurred after so short an interval.

TABLE XXXVII.—*Infant mortality and stillbirth rates, by interval from preceding confinement and color and nativity of mother; births from all pregnancies.*

Interval from preceding confinement and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ¹
		Number.	Percent. ¹			
All mothers.....	4,714	142	3.0	4,572	637	139.3
No preceding confinement.....	1,308	43	3.3	1,265	186	147.0
Interval from preceding confinement:						
Under 15 months.....	557	24	4.3	533	98	183.9
15 months, under 18.....	429	16	3.7	413	65	157.4
18 months, under 24.....	862	13	1.5	849	113	133.1
24 months and over.....	1,426	39	2.7	1,387	138	99.5
Not reported.....	132	7	5.3	125	37	296.0
Native white mothers.....	1,054	36	3.4	1,018	100	98.2
No preceding confinement.....	371	15	4.0	356	35	98.3
Interval from preceding confinement:						
Under 15 months.....	77	5		72	14	
15 months, under 18.....	88	5		83	6	
18 months, under 24.....	161	1	0.6	160	17	106.3
24 months and over.....	346	10	2.9	336	24	71.4
Not reported.....	11			11	4	
Foreign-born white mothers.....	3,632	105	2.9	3,527	532	150.8
No preceding confinement.....	925	27	2.9	898	150	167.0
Interval from preceding confinement:						
Under 15 months.....	477	19	4.0	458	84	183.4
15 months, under 18.....	340	11	3.2	329	58	176.3
18 months, under 24.....	697	12	1.7	685	95	138.7
24 months and over.....	1,073	29	2.7	1,044	112	107.3
Not reported.....	120	7	5.8	113	33	292.0
Negro mothers.....	28	1		27	5	
No preceding confinement.....	12	1		11	1	
Interval from preceding confinement:						
Under 15 months.....	3			3		
15 months, under 18.....	1			1	1	
18 months, under 24.....	4			4	1	
24 months and over.....	7			7	2	
Not reported.....	1			1		

¹ Not shown where base is less than 100.

EARNINGS AND INFANT MORTALITY RATE.

An important question is: Do infant mortality rates for all babies show a tendency to rise with fall in family income similar to that evidenced among babies born in 1916? Since the only information

on earnings relates to the year 1917, this question can be answered only on the assumption that the earnings in 1917 are roughly indicative for the groups as a whole, of the economic status of the families over the period of the mothers' maternity histories. Of course in an individual case in which the mother's pregnancy record extends over a number of years, the economic status may have been changed considerably; but for some families which have moved upward there are others that have fallen back: the assumption simply means that classifying the families into income groups based on fathers' 1917 earnings gives a result that is broadly correct for the period covered by the maternity histories. In the lowest income group, the infant mortality rate for all babies was 166; in the mid group, 139.5; and in the highest, 78.8.

TABLE XXXVIII—*Infant mortality and stillbirth rates, by annual earnings of chief breadwinner; births from all pregnancies.*

Annual earnings of chief breadwinner.	Total mothers.	Births, all pregnancies.					Infant mortality rate.
		Total.	Stillbirths.		Live births.	Infant deaths.	
			Number.	Per cent.			
Total.....	11,349	4,714	142	3.0	4,572	637	139.3
Under \$1,050.....	369	1,445	49	3.4	1,392	230	166.0
\$1,050, under \$1,850.....	706	2,383	57	2.4	2,326	325	139.5
\$1,850 and over.....	180	545	12	2.2	533	42	78.8
No earnings, no chief breadwinner, and not reported.....	94	341	24	7.0	317	40	126.2

* Excludes 19 mothers who had illegitimate births prior to 1916 and 3 whose maternity history was incomplete or unreliable.

CIVIC AND SOCIAL FACTORS.

BIRTH AND DEATH REGISTRATION.

The Indiana State vital statistics law as amended in 1913 requires births and deaths to be registered within 36 hours by the physician or other person in attendance. The enforcement of the law is centralized in the State board of health; in Gary the city health officer is in charge of enforcement locally and for this purpose is designated as a State official. The State was admitted to the death-registration area in 1900 and to the birth-registration area in 1917.

The material secured during the study, which included a house-to-house canvass of the entire city, showed that birth and death registration in 1916 was far from complete. Death registration was more complete than birth registration, but in a total of 211 deaths of infants born alive, 7 were found in which the death was not registered.

Of the total 1,353 live births included in the study, 195, or 14.4 per cent, had not been registered. This percentage is probably an understatement of the proportion of unregistered births, since others may have occurred which were not discovered by the canvass.⁶²

Failure to register 7 (or 3 per cent) of these unregistered live births was attributable to hospitals; 32 (or 14 per cent) to private physicians; 117 (or over half the entire number) to midwives; in 71 cases (31 per cent) there was no professional attendant at the time of birth or information as to the attendant was lacking. Of the live births included in the study which were attended by midwives 15.1 per cent were not registered, while of those attended by physicians in hospitals, 6.1 per cent, and of those attended by physicians outside of hospitals, 7.3 per cent, were not registered. In practically all the cases in which neither physician nor midwife was in attendance the birth had not been reported to the registrars.

Complete birth registration can be secured only through wider publicity, and through cooperation on the part of physicians, midwives, and health authorities. In case of persistent neglect or refusal on the part of physicians and midwives to report births, prosecu-

⁶² See Appendix, p. 87, for a more complete discussion of the evidence regarding birth registration.

Stillbirths of 7 or more months' gestation are required by law to be registered as both births and deaths, but since for purposes of admission to the birth and death registration areas the completeness of registration of live births and of deaths (exclusive of stillbirths) is used as the criterion, the discussion above has been based upon the registration of live births and of deaths of live born infants. The requirement for double registration of stillbirths is not observed uniformly. Thus, 8 stillbirths were registered as deaths but not as births, while 66 were registered both as births and deaths as required by law. Three stillbirths were found which were not registered either as births or deaths.

tions may prove necessary to enforce the law. In Gary during the three or four years prior to the study no prosecutions had been made for neglect to register births.

In July, 1914, the registrar of births in Gary adopted the practice of giving a certificate of birth registration to the parents of each child whose birth was registered. This practice has met with a considerable degree of success wherever it has been tried in stimulating parents to secure prompt birth registration for their children and in spreading information in regard to the birth-registration law among all classes of the population.

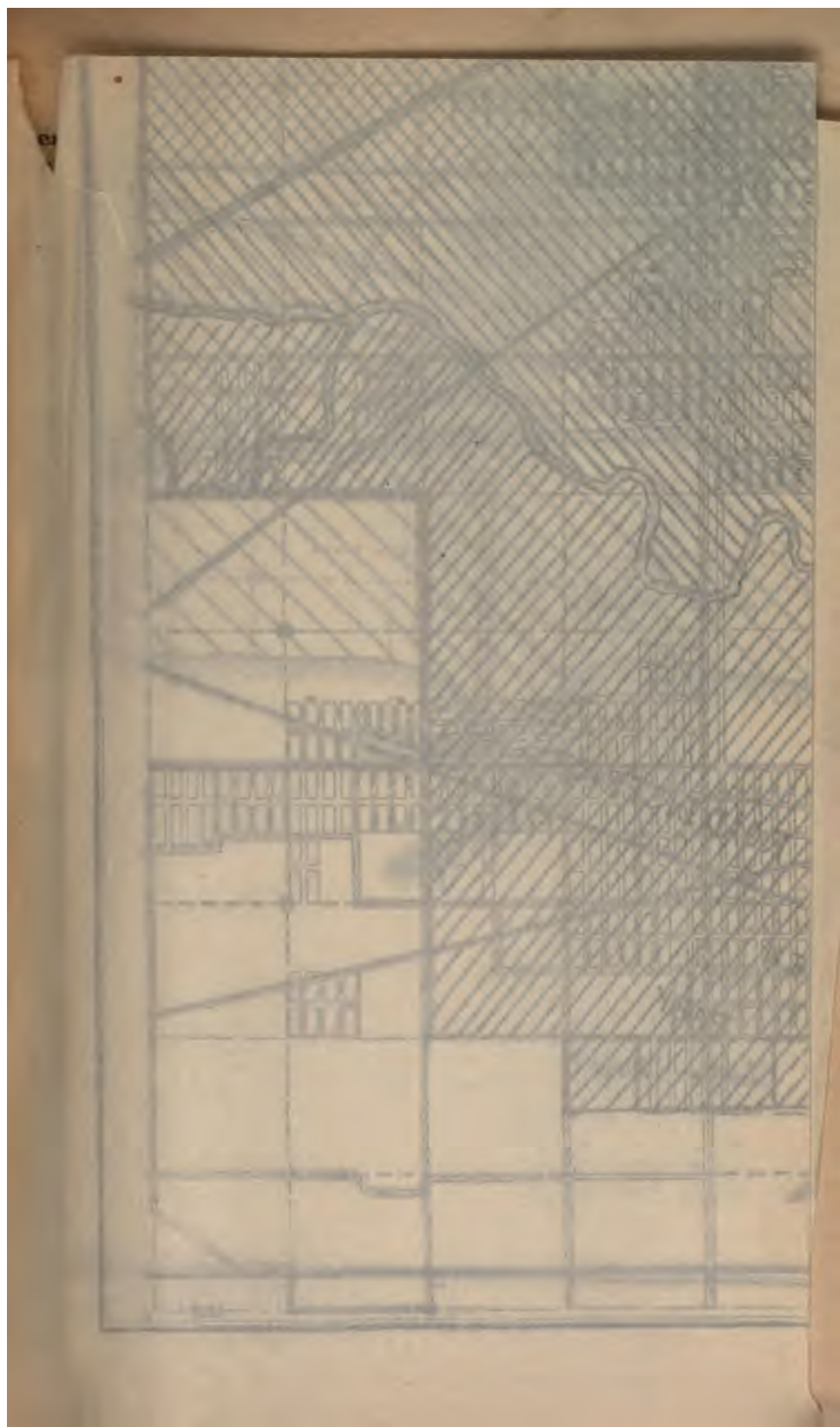
The importance of complete birth registration must not be underestimated. Complete registration of both births and deaths under 1 year of age is essential to an accurate knowledge of the infant mortality rate. Registration of births is coming to be everywhere more useful in furnishing a means of proof of age in connection with compulsory school attendance, employment certificate laws, employment in dangerous trades, voting privileges, not to mention its value in establishing inheritance and in proving nationality. One important use is furnishing the basis for visits of the health officer to insure that the provisions of the infant-blindness law, for the prevention of ophthalmia neonatorum, are observed.⁶³

HOUSING.

Laws and ordinances applicable to housing in Gary include the city tenement-house law of the State and a number of local ordinances.

The city's chief dependence in control of housing at the time of this study was the city tenement-house law of the State, which was passed in 1913; this law applies to all tenement houses, including apartment houses, in which two or more families live. In regard to tenement houses already built when the law went into effect, the law requires that water-closets, at least one to every two families, must be provided; basement water-closets are prohibited; water must be supplied on each floor. If a tenement is found unfit for habitation, or dangerous to health, authority is given to the board of health to order the house put into good condition or vacated. Fire escapes were required to be provided for all tenement houses of three or more stories. With reference to new tenement houses the provisions of the law are much more strict. Connection with water and sewer mains must be made if the mains lie within 100 feet; limits are prescribed to the proportion of the lot that may be covered by buildings; each tenement must be provided with a yard; rear tenements are prohibited; further regulations cover other particulars such as the arrangement of rooms, window space, separate water-closets within

⁶³ Book of Instructions to Health Authorities, Infant Blindness Law, p. 126.





ent or tenement, and fire escapes for tenements three stories in height. Provision for enforcement is made by permits and inspections.

Provisions provided for permits for building, and for building and laid down specifications relating to fireproof construction, space, and light and air shafts. The enforcement of regulations was in charge of a department of buildings, commissioner.

Principal weakness of the State law and the city ordinances is absence of regulations applicable to one-family dwellings. As a result, in Gary many tenements constructed before the State law went into effect already incorporated serious housing defects. The demand for housing accommodations in Gary has exceeded the supply of desirable quarters, many tenement structures have continued in use and the condemnation and abandonment of unfit dwellings has been retarded.

Conditions in Gary may be considered as largely influenced by the circumstances of its founding. Practically all the buildings of recent origin. The city grew rapidly, but local ordinances and government building were slow to appear, with the result that during the early period of growth building was little regulated, either by ordinance or by State law. Housing was begun under the leadership of the land company, a subsidiary company to which the corporation gave the task of providing shelter for the employees of the steel mills. In certain subdivisions, the development of housing remained largely in control of this subsidiary company. In other subdivisions, the company's housing developments, as shown later, were the most part in well-built and attractive residence areas, but in other parts of the city less satisfactory housing conditions arose.

THE SUBDIVISIONS OF GARY.

The planners of the city of Gary found their chief problem in the shifting hills of sand which covered the chosen site on the north shore of Lake Michigan. The mills secured a lake front of 1.5 miles,⁶⁴ and the spacious harbor in which huge ore steamships were constructed. The Grand Calumet River, parallel to the lake shore, was made to flow in a new channel half a mile from the shore it had formerly occupied, and formed a line of division between the mills and the city designed to house the mills' employees. The river, ribbed bands of railroad tracks already converging from the north, ago, lying to the northwest, separated mills and city. The city plan was laid out on the simple but unlovely gridiron plan. The main street from the mill gates runs Broadway, the principal

⁶⁴1917-18, p. 4.

north and south thoroughfare, and intersecting it at right angles is Fifth Avenue, the main east and west business street of the city.

The subdivisions of the city nearest the mills—the First Subdivision, Kirk, and Ambridge—were largely developed by the land company for the companies whose mills lay to the north just beyond the railroad tracks and the river. Before opening a district for residence, streets were laid out and paved, sewers and water mains were constructed, and attractive dwellings with modern improvements were erected. For the most part, the company houses exhibit a pleasing variety of architecture. In the section of the city just south of the Grand Calumet are the attractive red-brick, frame, or brick-and-frame houses built for the employees of the steel company and the workmen of the bridge company; and the structures in plaster and cement, very different in plan and appearance, in which the workmen of the sheet and tin plate mills and their families dwell. In contrast to these groups of homes are the more stereotyped and ugly small frame houses sheltering the employees of the freight railroad which serves the mills and has its great yards north of the Grand Calumet River. Besides the dwellings erected by the land company, many houses, apartment buildings, and business blocks were erected independently, but subject, when building was done upon company-owned land, to certain salutary restrictions.⁶⁵

At first a number of two-family frame houses were rented by the land company to foreign-born laborers employed in the mills. Perhaps because these families were unfamiliar with such modern conveniences as bath, toilet, and sink, or perhaps because they overcrowded their houses with lodgers, the company before long refused to re-rent to these first tenants, put the buildings into good condition, and then rented them to Americanized workmen only, leaving the foreign-born laborer to house himself and his family as best he could. The result of this policy was to concentrate the foreign-born workmen in the South Side and Tolleston, subdivisions which display bad housing conditions.

A number of long, one-story frame buildings, cheaply constructed and designed to bring in a maximum return in rental, which were built on the South Side, perhaps epitomize the worst ills of uncontrolled housing. They were planned for lodging houses, and divided into two-room, or more rarely three-room, apartments. These small apartments were occupied by families, however, with consequent overcrowding. When two such long buildings occupy adjoining or "shoe-string" lots with only a narrow passage between, used in common by the tenants of both buildings, the congestion is great, and but little relief is afforded by the small yards left at the end of each lot. Two adjoining houses of this type supplied but a single

⁶⁵ Including uniform building line and modern type of building.

water faucet and four privies for the use of 12 families. In another instance a single flush toilet was provided to accommodate nine families. Inadequate at all times, during cold weather it was rendered useless, due to its location at the end of the last apartment where it was not protected against freezing.

Apartments in such houses were found occupied by both colored and white families of different nationalities, as well as by groups of lodgers. From the point of view both of morals and of sanitation such buildings are not in accordance with decent housing standards, and their continued existence should not be tolerated.

The possibility of using a single lot for more than one house was not overlooked in the haphazard, little-regulated building of Gary's South Side and examples of rear houses are not lacking there. One rear house abutting directly on the alley faced upon a small, cluttered yard, flanked with coal sheds and closed at its other end by the back of the house occupying the front of the lot. Six of its rooms were occupied by a Spanish family of 6 and their 6 lodgers, and its basement, containing three rooms, housed a Polish family and lodgers, 8 persons in all. These 20 individuals were dependent upon a single toilet under the outside steps leading from the yard to the first floor. It was dark, dirty, ill ventilated, and its walls and door had been disintegrated by dampness.

Portions of the South Side had city water, while other sections were still using well water at the time this study was made. Some houses had baths, indoor toilets, gas, and electricity and were in every way modern; others lacked all these features. Privies were still far too numerous. Certain districts of the South Side embodied many of the primitive conditions of pioneer life, where, for a nominal yearly fee of a dollar or two, one might have squatters' rights and put up one's own shelter or occupy the cast-off abode of a family which had prospered and been enabled to move into a house. Tumbledown shacks, made of scraps of boards unevenly pieced together, having roofs patched with tin cans and pierced by stovepipe or tile, were clustered together in the sand alongside more pretentious and stable, though less picturesque, tar-paper structures, which might even disport brick chimneys. The wind, ever busy with the sand, frequently made rebanking of shacks necessary, especially when winter struck. Gardens were not possible because of the character of the soil, but the desire of an agricultural, foreign-born people to possess chickens, ducks, geese, or pigs could be satisfied. In the construction of pens for domestic fowls and animals ingenuity had full play. Their frequent proximity to the living quarters of the families was undesirable.

The heat in these low buildings during summer was intensified by the glare of the sun upon the hot sand; the water supply was a well

common to many, and the toilet was often but a single privy for several families.

In short, the South Side as a whole, in 1918, exemplified the need of community supervision over housing conditions, especially in districts largely inhabited by citizens of foreign birth.

More closely akin to the South Side than any other section of the city was Tolleston, an older town, which became part of the city of Gary in 1910. In foreign population it ranked next to the South Side; in much of it, living conditions were rural. Wells were in use where city water had not yet been piped, and outside privies were still to be found.

Clark and Pine were also rural sections. The city sewer and water systems had not been extended to them, and they were sparsely populated. West Gary, another subdivision not at all thickly settled, was tending to become a good residence section and, though water and sewer systems had not yet reached it, some houses in it were being fitted with modern plumbing.

Ridge Road and Glen Park, subdivisions lying farthest to the south, were separated from the bulk of the city by the Little Calumet River and they were characterized by a different physical contour and a greater degree of vegetation and beauty. Their population was mostly native white and many houses were modern family residences well constructed and situated.

Lincoln Park, just north of the Little Calumet River, closely resembled the South Side and Tolleston in the character of its housing and population. It suffered more than any other subdivision from periodic inundation by the Little Calumet, a stream which might almost be considered to have no banks—so unbrokenly flat and marshy is the land on each side of the small river's shallow bed.

In sanitary development, in economic status of families and in nativity of population, certain subdivisions grouped themselves together. Ambridge and the First Subdivision, with predominantly native white population, with more uniformly excellent housing, wider extension of sewers and water mains, and general high economic level formed a group in contrast to Lincoln Park, the South Side, and Tolleston, where the greater proportion of the population was of foreign birth, yard privies and well water were still used by many, housing was much less favorable and the economic status of the bulk of families lower than in the sections chiefly native white. In the one group, excellence of housing and sanitation was found co-existent with other factors favoring a low death rate among babies; in the other, unsuitable housing and community failure to develop municipal sanitation and hygiene to a high degree were allied with forces antagonistic to infant life. Among the live births in Ambridge and the First Subdivision, 27 infant deaths occurred, resulting in an

infant mortality rate of 90.6 for these parts of the city. In Tolleston, the South Side, and Lincoln Park 942 babies were born alive and 133 deaths occurred under 12 months of age, giving an infant mortality rate of 141.2. The contrast in the infant mortality rates from the gastric and intestinal diseases as shown in Table XXXIX was even more marked. In the sections where housing ills were greatest and where the yard privy lingered, the infant mortality rate from gastric and intestinal diseases was 63.7; in the sections preponderantly native white where community progress had been greater the corresponding rate was 23.5.

TABLE XXXIX.—*Infant mortality rates from all causes and from gastric and intestinal diseases, by subdivision of city; live births in Gary in 1916.*

Subdivision of city.	Live births.	Infant deaths.			
		Total.	Infant mortality rate. ¹	Gastric and intestinal diseases.	
				Number.	Infant mortality rate. ¹
Total.....	1,353	169	124.9	68	50.3
Cambridge.....	36	2			
First Subdivision.....	262	25	95.4	7	26.7
Ridge Road and Glen Park.....	63	6		1	
Lincoln Park.....	27	3		2	
South Side.....	729	104	142.7	46	63.1
Tolleston.....	186	26	139.8	12	64.5
Park, Pine, and Cavanaugh.....	6				
West Gary.....	5	1			
Not reported.....	39	2			

¹ Not shown where base is less than 100.

The welfare of infant and mother has long been recognized as a test for judging the excellence of a city's community life because especially upon babies and mothers do the failures of municipal endeavor fall. Among the elements in a city's work for health and hygiene, besides its housing, are its water supply, milk supply, sewer system, system of garbage collection and disposal, street cleaning and paving, as well as its agencies more immediately concerned with infant and child welfare. All of these have interest and merit study is criteria of community vision and community recognition of responsibilities.

DEPARTMENT OF HEALTH AND CHARITIES.

At the time of this study, chief responsibility for civic health and sanitation in Gary was centered in a department of health and charities headed by a board of health of four physicians, one of whom acted as secretary. The health staff included besides the board of health, one sanitary inspector, one food and milk inspector, a plumb-

ing inspector, a city bacteriologist and chemist, a nurse, and a city matron. The secretary of the board of health was the city health officer; neither he nor any member of the board was giving full-time service to city health work. Part-time service and inadequate recompense were faults inherent in the State law regulating health work throughout the cities, towns, and counties in Indiana. In 1918, in cities of the second class, to which group Gary belonged, salaries of members of boards of health did not exceed \$100 per annum and the secretary of a board might not be paid in excess of \$1,000 a year for his services.⁶⁶

As already mentioned, the health officer was in charge of vital statistics in the city. Recognizing the importance of prompt recording of births and deaths, he began in July, 1914, to send a certificate to the parents of each baby whose advent was reported to the health officer by the attendant at birth. In the opinion of the health officer, these certificates had been the means of securing more complete registration not only of births in the current year but of earlier births which had failed of record. During the 3 or 4 years preceding the study no use had been made of prosecution to enforce the law requiring registration of births.

The health department had recognized the value of a good supply of pure milk in reducing infant mortality and worked toward the elimination of dirty and unfit milk. This subject is discussed further in the following section.

The city of Gary was handicapped in making provision for nurses on its health staff. During the summer months of 1918, however, a city-paid trained nurse was employed, as part of the police staff, to do infant-welfare work and to give educational service to the mothers living in Gary's South Side where the summer toll of infant deaths was especially high.

Another trained nurse, who was on the staff of the health department, visited cases which came under the supervision of the department because of contagious diseases.⁶⁷

The members of the department of health and charities other than members of the board of health were full-time employees reporting every two weeks to the board's secretary. The municipal laboratory presided over by the city chemist was equipped for the making of chemical and bacteriological tests of milk and water, tests for tuberculosis, meningitis, diphtheria, hookworm, typhoid, and trachoma, as well as for venereal diseases.

⁶⁶ Indiana Yearbook, 1918, p. 856.

⁶⁷ The mayor's annual message to the city council, 1919, said: "I am of the opinion that laws should be enacted which would authorize cities of this magnitude to employ a full-time physician and surgeon at the head of our health department and also a corps of trained nurses. During the past year we have had a trained nurse on our police department, and I assure you that the work she has done and the results obtained have been remarkable."

The sanitary inspector with his deputy established and maintained quarantine; investigated insanitary and uncleanly premises of home dwellers or business places, public nuisances of any sort which were reported, and overcrowding in rooming houses; inspected privies and toilets; ordered the provision of garbage cans and containers; and initiated prosecution of offenders against the city's sanitary regulations, wherever necessary. The inspector was hampered in bettering sanitary conditions by the inadequacy of the building ordinances and the fact that the State housing law did not apply to one-family dwellings. In spite of having no power to compel the removal of yard privies belonging to one-family houses he had succeeded by persuasion in reducing markedly the number of outside closets.

MILK SUPPLY.

In 1918 Gary citizens were receiving their milk supply from 126 different farms through 13 licensed city dairies.

An ordinance passed in 1908 provided that it should be unlawful for any person, firm, or corporation to engage in the sale of milk within the town of Gary without first procuring a license granted by the town clerk upon presentation of a certificate from the secretary of the board of health. By a subsequent ordinance each milk dealer had been further required to furnish to the secretary of the board of health the name and location of every dairy, farm, or other place where the milk which the dealer was offering for sale had been produced.⁶⁸ The ordinance provided further that milk should contain 3.6 per cent of butter fat and 8.4 per cent of solids not fat, but the State law fixed 3.25 per cent as the minimum for butter fat and 8.5 per cent for milk solids exclusive of fat.⁶⁹

The pure food and drug law of Indiana of 1907 forbade the manufacture, sale and offering for sale of any adulterated or misbranded foods or drugs. It defined adulterated milk as milk to which water or any foreign substance had been added; milk produced by sick and diseased cows; milk from which the cream or part thereof had been removed; milk which was not of standard quality; milk collected and kept or handled under conditions which were not cleanly and sanitary; milk which contained visible dirt, or less than 8½ per cent of milk solids exclusive of fat and 3¼ per cent of milk fat; or milk to which color or preservative had been added.⁷⁰

The State law further provided⁷¹ against the use of any building for stabling cows for dairy purposes "which was not properly constructed, well lighted, well ventilated, and provided with a suitable solid floor of plank, cement, or other impervious material that can be

⁶⁸ Ordinances, City of Gary 1913, p. 119.

⁶⁹ Pure Food Laws of State of Indiana, p. 3; Ordinances, City of Gary, 1913, p. 118.

⁷⁰ Pure Food Laws of State of Indiana, p. 3.

⁷¹ *Ibid.*, p. 30.

readily cleaned." It held that all milking rooms and stables were to be "thoroughly clean and in good repair and each milk cow clean and groomed." All milk as soon as drawn was to be removed from the stable to a milk room, separate from the place in which cows were kept, and used exclusively for the handling and keeping of milk and cream. The milk room must be of sanitary construction, and equipped with facilities for straining, cooling and storing milk and for "washing and sterilizing all utensils and apparatus in which milk is removed, stored and delivered."⁷² All milk was to be cooled to 60° F., or below, within one hour after milked and kept at such temperature until it left the farm, or, if retailed to consumer, until it was delivered.

By city ordinance milk and cream had to be Pasteurized and clarified before Pasteurization by means of centrifugal clarifiers or separators.⁷³ Pasteurization required subjecting the milk to a temperature of at least 145° F. for 30 minutes, or 165° F. for 30 seconds. Immediately after Pasteurization, milk or cream must be cooled to 50° F., or below. Records which would show the temperature of the milk and cream during Pasteurization were to be kept by "some form of self-recording thermometer to be available for inspection." All cans, bottles, or other containers must be sterilized by live steam or hot water at a temperature of at least 170° F. All milk and cream must be sold to retail or wholesale trade in the original container, which must show the name of the filler or packer, and bear the word "Pasteurized" or "raw." Labels or caps must, moreover, bear the name or trade-mark of the person or firm originally filling the bottles and be stamped to show the day of the week the milk or cream contained in the bottles was received from the producer. It was thus required that milk or cream sold in Gary should be Pasteurized and bottled.⁷⁴

The enforcement of the provisions of both city and State rulings regarding milk in 1918, lay in the hands of a food and milk inspector who was both a State and city official and a member of the city department of health and charities. This inspector had supervision over the 13 city dairies, the vehicles, the milk cans, and the stores dispensing milk, and over the farmers selling it to the city; in addition, he collected samples of milk and cream for analysis. He endeavored to make monthly visits to the 126 farms supplying the city, timing his visits for no exact day but, as far as possible, so that milking would be in process on his arrival. The city dairies he visited weekly and observed the records of the thermometers which indicated the tempera-

⁷² *Ibid.*, p. 31.

⁷³ City Ordinance No. 543 regulating the production and sale of milk passed Jan. 17, 1916.

⁷⁴ An exception to the requirements for bottling was that restaurants and hotels might receive milk or cream by the can. None but bottled milk or cream might be peddled on the city streets.

tures at which Pasteurization had been effected. Stores and vehicles he inspected as frequently as his other duties would permit.⁷⁵

Gary milk and cream were examined for bacterial count, total solids, and butter fat weekly by the city chemist and bacteriologist. His report for 1918 showed 500 chemical examinations; 514 bacteriological examinations of milk and cream, and 175 special chemical examinations of milk. Reports based on his analyses were published weekly in the city papers giving the percentage of butter fat, the bacterial count per cubic centimeter in the milk of each dairy and describing the milk as "dirty," "slightly dirty," or "clean."⁷⁶

During 1918 there was considerable dissatisfaction with the quality of the milk supply in the city and a feeling that the bacterial count ran too high. Mothers not infrequently, as their reason for not feeding their babies milk, stated that the supply was dirty. For a time the city newspapers failed to publish the weekly reports, but publication was resumed at the request of women interested in knowing about the quality and purity of milk they were buying. A movement was started in 1918 for the purchase of milk from near-by farmers to be delivered by truck, a plan which would obviate many of the disadvantages resulting from the "long haul." By the end of the year, 160 to 200 of the 600 or 700 cans of milk used daily were being received by truck.

The duties of the one food and milk inspector were numerous and there was a growing realization that additional inspectors were necessary to watch over the city's milk supply. City ordinance and State law were together comprehensive in regulatory power⁷⁶ and, had provision for their enforcement been more adequate, should have insured to Gary a milk supply both safe and satisfactory.

COLLECTION AND DISPOSAL OF GARBAGE AND OTHER WASTE.

During the period covered by this study of infant mortality and up to May, 1918, the city ordinance regulating the removal and disposal of garbage specified that no person, firm, or corporation might collect and remove garbage without first securing a permit from the secretary of the board of health. Such permits could be granted only to qualified applicants 18 years of age, or over, who were properly equipped for such work. Each owner of a dwelling house was required to furnish a suitable and sufficient metal container with tightly fitting cover. A city incinerator was maintained for the disposal of the garbage which the city itself collected.⁷⁷

⁷⁵ Statement of food and milk inspector.

⁷⁶ In the ordinance requiring Pasteurization the provision permitting the alternative method of heating milk to a temperature of 165° F. for 30 seconds was not in accord with the most approved practice, and in 1921 this method had been abandoned.

⁷⁷ Ordinance No. 23, Mar. 22, 1910; Ordinance No. 212, Apr. 15, 1912; Ordinance No. 538, Dec. 20, 1915.

In April, 1918, a new ordinance was passed to become effective on and after the 15th of May and to repeal all previous ordinances on the subject.⁷⁸ The new ordinance stipulated that separate receptacles should be provided for garbage, for waste in the form of tin and metal, for glass and earthenware, and for ashes. By the provisions of the new regulation, the city assumed complete responsibility for collection of garbage and forbade the use of the streets and alleys of Gary by any person or corporation for the purpose of removing and transporting garbage. Before the end of the year, collections were being made daily in the business section; three times a week in more thickly settled residence districts; and twice a week in sparsely settled regions.

By keeping garbage free from other forms of waste the city was enabled to contract for the sale of all garbage collected. In the operation of this system of contract, however, care must be exercised in selecting the party to the contract if evils are to be avoided. It would appear unwise to grant the right to purchase garbage for feeding swine on a farm located within the city limits. Even if contract were made with a farmer outside the city, it would be desirable, especially if close to the city, that the farmer should be equipped to handle the garbage in a satisfactory way. The first contract made under the new ordinance system considered these points and was not attended by evils.

The city also shouldered the burden of collecting ashes, glass and earthenware, and tin and metal waste. This duty, like that of gathering garbage, was placed in the department of public works under the supervision of the street commissioner. Collections of ashes were made once in two weeks in residence and once a week in business districts. The sale of these forms of waste also was authorized, and accordingly carloads of tin cans collected were sold. The ashes were utilized in constructing alleys.

Although Gary possessed no city dump there were different places on undeveloped private property which the city in common with private individuals was allowed to use for dumping purposes. The street commissioner inspected these dumps regularly to see that nothing was deposited which would be a menace to the city's health.

At the time of the completion of the field work of this study in October, 1918, the change to the regulations of the new ordinance had not yet been wholly completed and some of the evils of the older system lingered. By the end of 1918, however, considerable improvement had been made in regularity of collection of all forms of waste, and the consequent increased cleanliness of alleys was noticeable.

⁷⁸ Ordinance No. 697, Apr. 17, 1918.

SEWERS AND SEWAGE DISPOSAL.

Gary's sewerage system in 1918 included 82 miles of sewers, of the combination sanitary and storm type. In the built-up portions of the city sewer connections were possible in practically 95 per cent of the area. A large part of the 31 square miles included within the city limits, however, was still rural in character, a fact which must be borne in mind when comparing the 137 miles of improved streets with the miles of sewer mains.

Disposal of sewage consisted in allowing it to flow untreated into the Grand Calumet and Little Calumet Rivers. The sewage, small in amount, from the two southernmost residence districts, Glen Park and Ridge Road, was emptied into the Little Calumet; the sewage from the rest of the city, together with the waste from the mills, was all emptied into the Grand Calumet. It was probably owing to the large volume of water with which the sewage was diluted that this method of sewage disposal apparently involved little that was unpleasant for Gary.

In 1918 some difficulty was encountered, however, in connection with the outlet for the sewers serving Broadway between Fifth and Eighth Avenues; the outlet was submerged, and failed to function properly. The city was giving its attention to this problem and a satisfactory solution was expected.⁷⁹

The sewer system was so constructed that the sewage, not only from the outlet into the Little Calumet but also from the three outlets into the Grand Calumet, could "be diverted to special locations for septic tanks and filtration beds at any time."⁸⁰

During 1917, 875 permits were issued for service connections to the public sewers.⁸¹

According to the State housing law, tenement houses were held to be accessible to public sewer if the sewer main ran within 100 feet of any outside line of the lot upon which the tenement house stood. The erection of tenement houses which did not connect directly with

⁷⁹ Annual Report, City Engineer, 1917, p. 4. * * * Needed relief will be secured when the submerged condition of the outfall is remedied. This can be done by lowering the water surface of the Grand Calumet River or by installing a pumping station at the river. The recent activities of the commissioners of the sanitary district of Chicago in connection with the disposal of the sewage from this city through their Calumet Sag Channel may offer the solution by the first method. This department (i. e., the city engineer's department) is gathering data to prepare plans for a solution by this second method.⁷⁷ Connecting the Grand Calumet with the Sag Canal and hence with the Chicago Drainage Canal would mean diverting the sewage from the Calumet region eventually into the Mississippi River. At present Gary sewage discharged into the Grand Calumet after being carried approximately 25 miles reaches Lake Michigan at the South Chicago, Ill., outlet of the river. It is believed that the current of the river does not permit the emptying of Gary sewage into the lake nearer Gary through the river outlet at Indiana Harbor. By additional industrial and domestic sewage from other parts of the Calumet region the Grand Calumet becomes grossly polluted before reaching South Chicago and constitutes a grave nuisance and source of contamination to the water supplies of Hammond, East Chicago, and Whiting.

⁸⁰ Annual Report of the Heads of the Departments of the City of Gary, Indiana, for the Year Ending Dec. 31, 1914, p. 61.

⁸¹ Annual Report, City Engineer, 1917, p. 5.

a sewer had been forbidden since 1913.⁸² As has been mentioned, there was in 1918 no city ordinance to supplement the State law and give adequate regulations for one-family houses.

WATER SUPPLY.

A water company, since May, 1907, has had the right and privilege of installing, acquiring, maintaining, and operating a waterworks plant in Gary. Lake Michigan is the source of the city's water supply through a tunnel 6 feet in diameter which extends 1½ miles from shore.⁸³ The water enters this intake at a depth of 40 feet. Coming from such a distance in the lake and at such depth the water shows the effect of storms only when they are exceptionally severe and stir the lake very unusually. The city engineer stated that no system of filtration was necessary and that there had been but few instances in the history of Gary when the city water had not been clear. The capacity of the system was more than sufficient for the city's needs. The average daily pumpage at the time this study was made was 5,738,344 gallons.⁸⁴

In 1918 the contents of a large concrete water tower of 500,000 gallons capacity lasted little more than an hour, whereas when the city was small the tower contained a day's supply.⁸⁵ No storage system was in use but purification was secured by the introduction of liquid chlorine into suction wells.⁸⁶

The report of the city chemist showed 99 examinations of the city water made by him in 1918. In addition, the water company had examinations of the water made at irregular intervals. All tests were favorable and showed that the city was in possession of a very satisfactory water supply. In fact Gary city water met the high standards set by the United States Public Health Service and had been certified for use on interstate carriers.

There were, in 1918, 80 miles of water mains in the city. It was estimated that 80 per cent of the population of Gary could secure city water. To the outlying rural parts of the city—Pine, Clark, and West Gary—the water system had not yet been extended. Some sections of the old town of Tolleston still lacked service.

In the districts of Gary to which the city water supply had not yet reached the driven well was the ordinary source of water. Such

⁸² Housing law of State of Indiana, acts of 1913, sections 7 and 35.

⁸³ Taylor, Graham R.: *Satellite Cities*, p. 183, New York, 1915.

⁸⁴ Indiana Year Book, 1918, p. 398.

⁸⁵ Statement of an official of the water company.

⁸⁶ An average of 1.8 pounds chlorine per million gallons was used, Sept. 30, 1917, to Oct. 1, 1918, in Gary. By a rule made by the State board of health in October, 1917, "the superintendents of all waterworks plants operating or maintaining chemical precipitation or purification plants" are required to submit a report to the water department of the State board of health on Monday of each week, giving the following facts: "Daily pumpage, pounds of chemicals and grains per gallon used each day, any unusual condition that may have affected pumpage, character of raw water, and the quality of the treated water during the week previous ending Saturday at midnight." Indiana Year Book 1918, pp. 396-398.

a well consisted of a pipe, with a sieve over its lower end, driven into the sand to a depth of perhaps 20 feet until a supply of ground water was tapped. A common iron pump attached to the upper end of the pipe made the well complete. Such wells did not present so great chance of contamination by seepage of surface water into them as would dug wells with imperfectly fitted tops or platforms. By the time surface water had filtered through the sand to the depth of the sieve at the end of the pipe there had been opportunity for the surface water to become greatly purified. In its well water as in its city water Gary was fortunate.

The typhoid-fever record of a city may be taken as indicative of the excellence of its water. But one death from typhoid occurred in Gary in 1917, and but 16 deaths in 1918. Gary had never had an epidemic traceable to its water supply.⁸⁷

STREETS AND ALLEYS.

In Gary a street must be paved if it is to be of much real value, since travel through loose sand is too laborious to be practicable. The 137 miles of improved highways within the city in 1918, therefore, represented by far the largest proportion of the streets. Only in the less-settled and less-frequented parts were unpaved sand roads used.

With the exception of the main thoroughfares, Broadway and Fifth Avenue, which were of greater width, Gary streets were uniformly 60 feet wide, while alleys for the most part were half as wide. Approximately 50 per cent of alleys in the built-up sections of Gary were paved.⁸⁸ During 1918 the ashes collected by the city were used to construct cinder alleys in the Ambridge and the Tolleston districts. As already stated, both water and sewer mains had been laid in the alleys, so that repair or extension work on the mains did not involve tearing up the streets.

As is the case in all windy cities, the streets of Gary, in spite of the efforts of an efficient street-cleaning force, sometimes looked dirty and littered. Even in the thickly built-up sections a high wind could still displace a considerable amount of loose sand. In Gary's earlier days it was found that paved streets and sidewalks might become covered over with sand drifting from neighboring lots. Accordingly the Gary council declared it a public nuisance to permit "loose sand to be carried onto the streets, alleys, sidewalks, and pavements" and provided a penalty for the property holder who allowed sand from his lot to remain upon the adjoining street and walk.⁸⁹

⁸⁷ Statement by city engineer, an official of the water company, and the city chemist.

⁸⁸ Statement of city superintendent of streets.

⁸⁹ Ordinance No. 113, Oct. 26, 1909.

Improvement in the condition of alleys due to the new system of city garbage and rubbish collection was marked in most parts of the city but perhaps less widespread on the South Side and sections where the paving of alleys had not progressed far. Successful enforcement of the provisions of the new method depends upon inculcating in the rank and file of citizens increased knowledge of their responsibilities and upon their intelligent cooperation with the civic agencies intrusted with collecting garbage and rubbish and with keeping streets and alleys clean.

Beauty of lawn and shade trees had indeed been bought with a price in Gary since, in most of the city, grass-covered yard and curb lawn had been won only by overlaying the sand with black earth and patiently and painstakingly fostering the formation of sod. The remark that the number of inches of black dirt on top of the sand in his yard might be taken as a measure of a householder's financial status in the community was not without its element of truth.

INFANT WELFARE.

During the years 1916 and 1917 comparatively little infant-welfare work was being done in Gary. One infant-welfare station was conducted under the auspices of Neighborhood House, a settlement in the midst of the foreign-born community on the South Side. The work, conducted in cooperation with physicians, consisted in educating the mothers in the proper care of babies. Babies were weighed and measured and given physical examination; mothers were taught modification of milk according to the formulæ prescribed by physicians. General instruction in the hygiene of infancy was accompanied by emphasis upon the fundamental principles of the care of milk and other food.

Some prenatal work was done, both with mothers visiting the station and with mothers in their homes.

A Little Mother's class for girls of foreign-born parentage met once a week to learn proper ways of bathing, dressing, feeding, and putting a baby to sleep, as well as how to care for an infant's clothing.

Milk was dispensed from Neighborhood House but not without cost except to those designated by the charity association. The privilege of securing milk kept fresh and cool on ice was appreciated by mothers who had no home facilities for preventing milk from souring. The city in 1918 gave \$50 to the settlement for ice, to be distributed to families who were unable to purchase it.

Late in 1918 Friendship House, another settlement house on the South Side, resumed infant-welfare work it had largely discontinued during 1916 and 1917.

Besides these stations, a third center for infant-welfare work on the South Side had been opened under the charge of the visiting

nurse for the employees of one of the steel companies. This station not only undertook teaching of infant care, but also held a clinic twice weekly for examination and treatment of sick babies. In 1918 this station was reaching about 50 families.

The work of the health department, besides the activities already discussed, included in 1916 and 1917 the enforcement of the provisions of the infant blindness law. The city matron's work was also partially concerned with infant welfare, since in cases of extreme poverty or of abandonment she often provided outfits for newly arrived infants; this work, however, was incidental to her general philanthropic and charitable work.

In 1918, the city took a greater interest in infant welfare. A city-paid nurse was put in charge of the work of the infant-welfare station at Neighborhood House already mentioned, and the city matron reported daily to this station for work during the summer months.

Since 1918 Community House in the First Subdivision has also become a center for infant welfare.



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SUMMARY AND CONCLUSIONS.

This study of infant mortality and of conditions in the city of Gary affecting babies born in 1916 contributes further evidence of the importance of social and economic factors in infant mortality.

Infant mortality rate and cause of death.

Among 1,353 babies born alive 169 deaths under 1 year of age occurred, and the resulting infant mortality rate was 124.9. Four-tenths of the deaths were attributed to gastric and intestinal diseases; one-fifth to causes connected with early infancy; and one-sixth to respiratory diseases. Gary's infant mortality rate from gastric and intestinal diseases, 50.3, was almost double the corresponding rate for the birth-registration area.

Loss from causes connected with early infancy gave Gary a specific infant mortality rate (25) half as large as the one from gastric and intestinal diseases, and somewhat less than the rate in the birth-registration area.

The infant mortality rate from respiratory diseases in Gary was 19.9; from the group of "other communicable diseases" it was 11.1. These rates were both higher than the corresponding rates, 15.9 and 8.9, in the birth-registration area.

Nationality of mother and infant mortality.

Of the births in Gary in 1916, 71 per cent were to foreign-born mothers. The principal nationalities were the Polish with 19.7 per cent, the Serbian and Croatian with 11.6 per cent, and the Slovak with 9.7 per cent. The infant mortality rate among babies of native white mothers was 96.6 and among infants of foreign-born mothers, 133.5. The babies of Polish mothers had the highest rate, 148.3. The mortality rate from gastric and intestinal diseases among the infants of foreign-born mothers was $2\frac{1}{2}$ times as high as among those of native white mothers and the rate from respiratory diseases was slightly higher; the rate for "other communicable diseases" was identical in the two groups, while the rates from malformations and from early infancy were considerably lower among the infants of foreign-born than among those of native white mothers.

Feeding and infant mortality.

Of the infants who lived to be fed, 93 per cent were exclusively breast fed and only 4 per cent were exclusively artificially fed in the

first month. The proportion breast fed gradually diminished and the proportion artificially fed increased month by month; in the ninth month only 35.4 per cent were exclusively breast fed, 41.7 per cent were partly breast fed, and 22.5 per cent were exclusively artificially fed.

During the first 9 months of life the mortality among the artificially-fed infants averaged 5 times that among the exclusively breast fed and about 3 times that among the partly breast-fed infants. The mortality from gastric and intestinal diseases among the artificially-fed infants was relatively much greater, on an average 8 times as high as among breast-fed infants. The mortality from other causes, including respiratory and "other communicable" diseases, was also higher among the artificially-fed infants, and averaged about 4 times as high as among the babies exclusively breast fed.

The mortality among babies of foreign-born mothers was greater than among babies of native white mothers among both the exclusively-breast fed and the exclusively artificially-fed infants.

Native mothers fed their babies artificially earlier and more extensively than mothers of foreign birth. Supervised feeding of babies was about twice as frequent among infants of native mothers—a fact which accounts in part for the greater safety which attended the use of artificial feeding by these mothers. Examples of unwise feeding of infants were far too common, and served to illustrate the need of educating mothers in acceptable and safe methods of feeding their babies and caring for articles of food.

Maternal mortality and maternity care.

Seven mothers died within a year after confinement in 1916, three from causes connected with childbirth. The care, supervision, and assistance that mothers receive during pregnancy and confinement have bearing not only on maternal health and well-being but also upon infant welfare. Of the mothers giving birth to children in Gary in 1916 seven-tenths had had no prenatal care; only about one-fiftieth had had care that could be termed adequate. Native white mothers secured better care than foreign-born mothers. About seven-eighths of the foreign-born women had no medical supervision whatever, while among native women this group constituted only two-eighths.

At confinement and for the lying-in period the foreign-born woman depended much more generally upon midwife services than did the mother born in the United States. About nine-tenths of the native white mothers, but two-tenths of the foreign-born mothers had physician attendants. Of the native white mothers 22 per cent and of the foreign-born mothers only 4 per cent were confined in hospitals.

Prenatal and confinement care received by the foreign-born mothers as a group was less skilled than that which native white mothers sought and obtained.

Gainful employment of mothers outside the home either during pregnancy or after confinement when their babies were still very young was not widespread. Only 3.5 per cent of the mothers worked away from home during pregnancy, and only 2.4 per cent after confinement during the life of their infants prior to the first birthday. Lodger keeping, on the contrary, was frequently carried on by mothers during pregnancy. Gainful employment of mothers during pregnancy was associated with increased infant mortality and stillbirth rates. The highest infant mortality rate occurred among babies whose mothers continued gainful work up to within a few hours of confinement.

Earnings of chief breadwinner and infant mortality.

A decline in the infant mortality rate with a rise in the earnings of the chief breadwinner in the family was again demonstrated in this study. When the chief breadwinners' earnings were under \$1,050 a year, the infant mortality rate was 137.8; when chief breadwinners' earnings reached or exceeded \$1,850 per annum, the infant mortality rate fell to 89.4; among babies to native white mothers when earnings were in the highest group, the mortality rate sank to 60. Over one-third of the babies of foreign-born mothers, and only one-tenth of those of native white mothers, had chief breadwinners in the lowest earnings group; somewhat more than one-fourth of those of native white, and somewhat less than one-twelfth of those of foreign-born mothers, had chief breadwinners whose annual earnings at least equaled \$1,850. From the point of view of infant welfare, low family income is important because of other unfavorable factors—ignorance, poor housing, and inability to purchase medical and nursing service—with which it tends to be associated.

Civic and social factors.

Birth and death registration.—Good vital statistics records are a prerequisite to ascertaining the status of infant well-being in a community. In 1916 about 1 baby in 7 was not receiving public record of birth in Gary, and for 1 in 30 of those who died under 1 year of age no death certificate was found. The city was attempting to secure public cooperation in birth registration by mailing a certificate to the parents of each child whose birth was registered. So far as the registration of births in 1916 was concerned, midwives in failing to report one-eighth of the births they attended were more serious offenders against Indiana's law for birth registration than were physicians, who failed to report one-twelfth of the births they attended. Midwives not on the official register of those licensed by

the State to practice were largely responsible for lowering the record of midwives as a whole. The law is explicit in requiring licenses for those who practice obstetrics and in providing for the prompt registration of births. Improvement lies in better enforcement.

Housing and other civic factors.—Poorer housing, less development in municipal sanitation, lower average in economic status, and preponderance of the foreign born were characteristics of the South Side, Tolleston, and Lincoln Park subdivisions. More uniformly better housing, superior development and extension of sewers and water mains, higher general economic level, and predominantly native white population were features of the First Subdivision and Ambridge. The infant mortality rate for the babies born in the first group of subdivisions was 141.2; in the second, 90.6.

City officials were aware that the building ordinances did not cover the one-family house and that the city's chief dependence in regulating building was the State law of 1913 directly concerned with tenement houses. Extension of sewers and water mains and the paving of streets were being pushed forward. The installation of a new system of garbage and rubbish collection by the city in 1918 was salutary.

Gary was still suffering in 1918 from having only a part-time city health officer, inadequately salaried, and no nursing staff sufficient to its work. Need for changing the State law governing city health departments was recognized.

Infant-welfare work.—During the years 1916 and 1917 comparatively little infant-welfare work was being done in Gary. In 1918 the city detailed a nurse to assist in this work during the summer months. This provision was totally inadequate to meet the needs of Gary's population. Gary needed additional infant-welfare stations and additional public-health nurses.

In conclusion, much of the mortality among infants in Gary was preventable. The heaviest toll was taken by the gastric and intestinal diseases, and it has been repeatedly demonstrated that the mortality from these causes can be largely reduced by the encouragement of breast feeding, improvement of the milk supply, improvement of community housing and sanitation, and especially by the instruction and education of mothers in the proper methods of infant feeding and care through the establishment of infant-welfare stations. Experience has shown that mortality from causes peculiar to early infancy can be reduced by education of mothers in the principles of prenatal care and personal hygiene during pregnancy and by skilled care at confinement. By carrying forward and extending work already commenced in Gary, through infant-welfare stations, prenatal clinics, and public-health nurses, it should be possible within a few years to reduce the infant mortality rate to a very low figure.

APPENDIX.

METHOD OF PROCEDURE.

Infant mortality rate.

An infant mortality rate expresses the probability of a live-born infant dying before his first birthday and is usually stated as the number of deaths under 1 year per 1,000 live births.¹ The usual approximate method of finding the infant mortality rate for a certain area is to divide the number of registered deaths of infants under 1 year of age occurring in a given calendar year by the number of registered live births in the same year. The number of deaths thus secured includes not only deaths of infants born in the same calendar year, but also some deaths of infants born in the preceding year or in a different area; it excludes deaths of infants included in the group of births if the death occurred either in a different area or in the following calendar year. The two numbers—of deaths and births—do not refer to the same group of infants. To avoid this inaccuracy, the method employed by the Children's Bureau is to follow each infant born in a given selected year in a certain area for a period of 12 months. The deaths among these infants are then compared to the births. In this way the deaths include no infants not included in the births, and the true probability of dying in the first year of life is secured.

The chief difficulty, in practice, in computing infant mortality rates arises from the incompleteness of registration of births and deaths. Two methods are available for treating the original data to make them more serviceable. One is to exclude the least accurate material, where it is known to be incomplete or inaccurate; the other is so to supplement the original data that the figures used include all the evidence applicable to the groups studied in the city.

Certain groups for which the information was inaccurate or incomplete were excluded in this study. The groups for which the rates were most open to question and most difficult to obtain were illegitimate births, births in families that moved away, and births to non-resident mothers.

The first of the groups that were excluded from the general analysis was the group of illegitimate births. The information secured was probably not so complete as for legitimate births; furthermore, it related to an abnormal family group.

¹ Stillbirths are omitted from both births and deaths.

Births to mothers who moved away in the first year of the infant's life formed the second group of exclusion. The information as to the number of deaths that occurred in this group was not complete. Obviously, if the infant moved away from the city after the first few weeks or months of life, his death, if he died, would not be registered in the city. Deaths registered in the city of infants born to mothers who later moved away also had to be excluded; otherwise the rates would be biased by the exclusion of live births only, with no exclusion of infant deaths to correspond.

A third group of exclusions was the births to nonresident mothers. These were excluded not only on the ground that in most cases the infant did not live in the city during his entire first year of life but also on the ground that the conditions under which nonresident mothers lived prior to coming to the city might have been different from those of the average mother in the city. In order to make the rate as characteristic of the city as possible these births were excluded.

Births to mothers who could not be found were also excluded. In such cases the probability was that the mother had moved away. No reliable information could be secured about these cases and hence the only safe policy was to exclude them.

In practice, since the visit of the agent of the bureau to the mother to secure the information called for on the schedule always was made after the first anniversary of the birth of the child—in some cases a year or more afterwards—births were excluded if the mother had moved away from the city prior to the agent's visit or could not be found at the time of the visit.²

The data submitted in the report apply, therefore, to births in the city during the selected year to resident married mothers who lived there during the child's first year and were found at the time of the agent's visit.

Though the records for births to resident married mothers were much more complete and satisfactory than for all births in the city, the difficulty of the incompleteness of registration still remains.

In Gary a house-to-house canvass was made to supplement the list of names secured from the birth register. This procedure was plainly necessary, since Gary was not in the birth-registration area in 1916. The canvass was undertaken not so much to complete the record of children born in Gary during the selected year as to complete the record of such children who lived in Gary during the first year of

²The rulings in two special cases might be mentioned: (1) If the mother died during the child's first year, the birth was included if the infant (or, in case of death, his family) had lived in the city during the first year after his birth. (2) In a few cases mother and child were away from the city for a part only of the child's first year but later moved back and were found by the agent. These cases were excluded in case of removal, a temporary absence not exceeding three months, such as absence during a summer vacation, not being considered a removal.

life. Obviously it would be more difficult to secure records for children whose mothers moved away from the city before the end of the first year of life, or for children who had died. The omission of such births from the canvass would not have affected the validity of the canvass for the purposes of this study. All the names secured either by birth records or by the canvass were used as a basis of visits to mothers, and those cases for which the information secured showed that the child had been born in Gary in the selected year and had lived in the city during his lifetime up to the first birthday were included in the detailed study. Incidentally the canvass greatly facilitated the work of finding the mothers, for it gave the correct addresses of most of the mothers to be interviewed.

Live births excluded.

With the foregoing explanation of the method of procedure in mind the significance of the exclusions and the rates for the excluded groups may be more easily grasped. During the selected year there were 1,682 known live births in Gary; of these, 274 had moved out of town and no trace of 32 could be found, making a total of 306 which were excluded on grounds of removal or lack of information. Forty deaths occurred in this group, giving a rate of 130.7. Of these 306 live births, 31 were unregistered. The majority of the 31 unregistered births were discovered through death certificates. The true number of unregistered live births to mothers who moved away from the city was probably greater than the number discovered, since, as suggested previously, it was difficult to locate unregistered live births through a canvass made after the families had moved away; on the other hand, the true number of deaths under 1 year of age was probably also somewhat greater than the number registered, since the deaths registered in the city did not include deaths which might have occurred outside the city after the families had moved away. In two instances the births were excluded on account of incomplete or unreliable data; in one of these cases the infant died.

Among the 19 live-born infants excluded on account of nonresidence of the mother, one death occurred in the city. In most cases the mother probably left the city soon after the birth of the child. The mortality therefore understates the true mortality for this group.

Two births were excluded on the ground of illegitimacy; neither of these babies died.

From the figures light may be thrown upon the completeness of the registration of live births in Gary. If the deaths of infants whose births were not registered are compared with the total deaths in the city of infants whose births occurred in the selected year, the figure of 21.8 per cent is obtained as an index of the proportion of live births unregistered. This index gives the true proportion only in case the

mortality in the groups where registration was faulty was the same as the average. The mortality rates are usually high in the foreign-born and low earnings groups among which registration is probably less complete. This percentage, therefore, represents a maximum statement of the number of live births unregistered. Another method of determining the proportion of live births unregistered is by comparing the unregistered live births which were discovered by the canvass or in other ways with the total number of live births. There were 227 unregistered births discovered or 13.5 per cent of the total number known to have occurred in the city in the selected year. A fairer comparison, however, is of the 195 unregistered live births to mothers who were resident in the city not only at the time of the birth but also at the time of the agent's visit, with the 1,353 live births in the same group; this gives a percentage of 14.4.

The true percentage of unregistered births probably lies slightly above this figure, but below the figure given by the first method.

TABLE I.—Registered and unregistered live births in Gary in 1916, infant deaths, and infant mortality rates for births included in and for births excluded from detailed analysis, by reason for exclusion.

Inclusion or exclusion of live birth, and reason for exclusion.	Live births.			Infant deaths.			Infant mortality rate. ¹		
	Total.	Registered.	Unregistered.	Total.	Births registered.	Births unregistered.	Total.	Births registered.	Births unregistered.
Total.....	1,682	1,455	227	211	165	46	125.4	113.4	202.6
Included.....	1,353	1,158	195	169	139	30	124.9	120.0	153.8
Excluded.....	329	297	32	42	26	16	127.7	87.5	.....
Reason for exclusion:									
Nonresidence or lack of information.									
Total.....	327	296	31	42	26	16	128.4	87.8	.....
Not found.....	32	28	4	6	3	3	.....	.....	.....
Data incomplete or unreliable.....	2	2	.....	1	1	.....	.....	.....	.....
Nonresident.....	19	19	.....	1	1	.....	.....	.....	.....
Removed.....	274	247	27	34	21	13	124.1	85.0	.....
Illegitimate.....	2	1	1	.....	.....	.....	.....	.....	.....

¹ Not shown where base is less than 100.

² Includes 2 not registered as deaths.

³ Includes 44 registered only as deaths.

Stillbirth rate.

Stillbirth rates are obtained by dividing the stillbirths by the total number of live and stillbirths. A stillbirth is defined as a dead-born issue of seven or more months' gestation. Miscarriages, or dead-born issues of less than seven months' gestation, were excluded.

A policy of exclusions was followed similar to that for infant mortality. Stillbirths to nonresident mothers were excluded because of the possible effect of conditions not characteristic of Gary; likewise, stillbirths to mothers who moved away prior to the visit of the

agent. In the latter case, not only was information difficult to obtain, but also there was the same chance of omission of births as in calculating the infant mortality rate.

In Indiana the law requires registration of stillbirths of seven or more months of gestation. A stillbirth must be registered both as a death and as a birth. It frequently happens, however, that a stillbirth is registered as a death but not as a birth. It is obvious that such an omission is one of carelessness only, as ordinarily a physician would register both. The number of unregistered stillbirths is difficult to determine. In the course of the canvass in Gary three cases of stillbirth were found which were registered neither as births nor as deaths.

Stillbirths excluded.

There were 60 registered stillbirths and 11 unregistered stillbirths² known to have occurred in Gary in the selected year; 4 of those registered were excluded because they were found to be miscarriages of less than seven months' gestation. Twenty-five stillbirths were excluded because the mothers had moved out of the city or were nonresidents, or because they could not be found. In these cases it could not be determined definitely whether the birth was a stillbirth or a miscarriage. Two stillbirths were excluded on account of illegitimacy. There were 40 stillbirths to mothers resident in the city both at the time of the birth of the child and at the time of the agent's visit. The stillbirth rate for the included group was found by dividing the number of stillbirths, 40, by the total number, 1,393, of births included in the study, giving 2.9 as the percentage of stillbirths. No rate has been formed for the nonresident, not found, or removed groups because it could not be ascertained from the records whether or not the birth was a stillbirth or a miscarriage.

TABLE II.—Stillbirths¹ in Gary in 1916 included in and excluded from detailed analysis, by reason for exclusion.

Inclusion or exclusion of stillbirth, and reason for exclusion.	Stillbirths ^a (total number).
Total.....	71
Included.....	40
Excluded.....	31
Reasons for exclusion:	
Nonresidence or lack of information.....	25
Not found.....	8
Data incomplete or unreliable.....	1
Nonresident.....	1
Removed.....	16
Miscarriage.....	4
Illegitimate.....	2

^a Includes miscarriages if registered as stillbirths.

² Includes 8 registered as deaths, but not as births.

GENERAL TABLES.

GENERAL TABLES.

TABLE 1.—Registration of birth, by attendant at birth; live births in Gary in 1916.

Attendant at birth.	Live births.				
	Total.	Registered.		Unregistered.	
		Number.	Per cent.	Number.	Per cent.
Total.....	1,353	1,158	85.6	195	14.4
Physician (at hospital).....	115	108	93.9	7	6.1
Physician (not at hospital).....	439	407	92.7	32	7.3
Midwife.....	753	639	84.9	114	15.1
Other, none, or not reported.....	46	4	.....	42	.....

TABLE 2.—Infant mortality rates, by cause of death; comparison of deaths among infants born in Gary in 1916 with infant deaths in the birth-registration area in 1916.

Abridged International List No. ¹	Detailed International List No. ¹	Cause of death. ²	Infant deaths in—			
			Gary.		Birth-regis-tration area, 1916.	
			Num-ber.	Infant mor-tality rate.	Number.	Infant mor-tality rate.
		All causes.....	169	124.9	82,734	101.0
		Gastric and intestinal diseases ³	68	50.3	20,834	25.4
		Diseases of the stomach.....	3	2.2	1,145	1.4
		Diarrhea and enteritis.....	65	48.0	19,689	24.0
		Respiratory diseases ⁴	27	19.9	13,092	15.9
		Acute bronchitis.....	1	.7	2,088	2.5
		Broncho-pneumonia.....	16	11.8	7,804	9.5
		Pneumonia.....	10	7.4	3,200	3.9
		Malformations.....	11	8.1	5,583	6.8
		Early infancy.....	34	25.1	27,586	33.7
		Premature birth.....	20	14.8	15,846	19.3
		Congenital debility.....	13	9.6	8,316	10.2
		Injuries at birth.....	1	.7	3,424	4.2
		Epidemic diseases and other commu-nicable diseases. ⁵	15	11.1	7,329	8.9
		Measles.....	5	3.7	1,175	1.4
		Scarlet fever.....	2	1.5	45	.1
		Whooping cough.....	3	2.2	1,824	2.2
		Diphtheria and croup.....	1	.7	418	.5
		Influenza.....	.....	.....	693	.8
		Dysentery.....	.....	.....	161	.2
		Erysipelas.....	.....	.....	464	.6
		Tetanus.....	.....	.....	77	.1
		Tuberculosis of the lungs.....	.....	.....	447	.5
		Other forms of tuberculosis.....	1	.7	673	.8
		Syphilis.....	2	1.5	1,149	1.4
		External causes.....	1	.7	887	1.1
		Diseases ill defined or unknown.....	8	5.9	765	.9
		All other causes.....	5	3.7	6,655	8.1
		Meningitis.....	.....	.....	626	.8
		Convulsions.....	.....	.....	1,030	1.3
		Organic diseases of the heart.....	1	.7	278	.3
		Other.....	4	2.9	4,721	5.8

¹ The numbers indicate the classification in the abridged and detailed lists, respectively, of the Manual of the International List of Causes of Death.

² The causes of death included in this list are those used by the U. S. Bureau of the Census (see Mortality Statistics, 1914, p. 660) in classifying the deaths of infants under 1 year. They are those causes of death or groups of causes which are most important at this age. The numbers of the detailed and abridged International Lists will facilitate their identification. In order to make discussion of the figures easier, these causes of death have been grouped in 8 main groups.

³ The term "gastric and intestinal diseases" as used in the tables and discussion, includes, as above shown, only the diseases of this type which are most important among infants; i. e., diseases of the stomach, diarrhea, and enteritis. It does not include all "diseases of the digestive system" as classified under this heading according to the detailed International List.

⁴ "Respiratory diseases," as used in the tables and discussion similarly includes only those of the respiratory diseases which are most important among infants; i. e., acute bronchitis, broncho-pneumonia, and pneumonia. It does not include all "diseases of the respiratory system" as classified under this heading according to the detailed International List.

⁵ Epidemic and other "communicable diseases" as used in the tables and discussion includes only those of this group which are most important among infants.

STAT VITALITY.

TABLE 1. — DEATHS FROM TYPHOID FEVER, 1916. (Data from reports of physicians in City of New York.)

Age and sex.	Deaths from typhoid fever, 1916.												
	Total	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	Eleventh	Twelfth
Male	10	1	1	1	1	1	1	1	1	1	1	1	1
Female	10	1	1	1	1	1	1	1	1	1	1	1	1
White	10	1	1	1	1	1	1	1	1	1	1	1	1
Colored	10	1	1	1	1	1	1	1	1	1	1	1	1
Under 5 years	10	1	1	1	1	1	1	1	1	1	1	1	1
5 to 14 years	10	1	1	1	1	1	1	1	1	1	1	1	1
15 to 24 years	10	1	1	1	1	1	1	1	1	1	1	1	1
25 to 34 years	10	1	1	1	1	1	1	1	1	1	1	1	1
35 to 44 years	10	1	1	1	1	1	1	1	1	1	1	1	1
45 to 54 years	10	1	1	1	1	1	1	1	1	1	1	1	1
55 to 64 years	10	1	1	1	1	1	1	1	1	1	1	1	1
65 to 74 years	10	1	1	1	1	1	1	1	1	1	1	1	1
75 to 84 years	10	1	1	1	1	1	1	1	1	1	1	1	1
85 years and over	10	1	1	1	1	1	1	1	1	1	1	1	1
Total	20	2	2	2	2	2	2	2	2	2	2	2	2

Source: Reports of physicians to the Bureau of Health, City of New York, 1916.

TABLE 2. — DEATHS FROM TYPHOID FEVER, 1916. (Data from reports of physicians in City of New York.)

Age and sex.	Deaths from typhoid fever, 1916.												
	Total	January	February	March	April	May	June	July	August	September	October	November	December
Male	10	1	1	1	1	1	1	1	1	1	1	1	1
Female	10	1	1	1	1	1	1	1	1	1	1	1	1
White	10	1	1	1	1	1	1	1	1	1	1	1	1
Colored	10	1	1	1	1	1	1	1	1	1	1	1	1
Under 5 years	10	1	1	1	1	1	1	1	1	1	1	1	1
5 to 14 years	10	1	1	1	1	1	1	1	1	1	1	1	1
15 to 24 years	10	1	1	1	1	1	1	1	1	1	1	1	1
25 to 34 years	10	1	1	1	1	1	1	1	1	1	1	1	1
35 to 44 years	10	1	1	1	1	1	1	1	1	1	1	1	1
45 to 54 years	10	1	1	1	1	1	1	1	1	1	1	1	1
55 to 64 years	10	1	1	1	1	1	1	1	1	1	1	1	1
65 to 74 years	10	1	1	1	1	1	1	1	1	1	1	1	1
75 to 84 years	10	1	1	1	1	1	1	1	1	1	1	1	1
85 years and over	10	1	1	1	1	1	1	1	1	1	1	1	1
Total	20	2	2	2	2	2	2	2	2	2	2	2	2

Source: Reports of physicians to the Bureau of Health, City of New York, 1916.

TABLE 6.—Mortality among infants by age of parents, by month of life and nativity of mother.

Month of life and nativity of mother.	Infants born in 1916.															
	Total.			Exclusively breast fed.			Partially breast fed.			Artificially fed.			Not fed.			
	Subsequent deaths.			Subsequent deaths.			Subsequent deaths.			Subsequent deaths.			Infants surviving at beginning of specified month.	Subsequent deaths. ¹		
	In year.	In month.	Per 1,000 survivors.	In year.	In month.	Per 1,000 survivors.	In year.	In month.	Per 1,000 survivors.	In year.	In month.	Per 1,000 survivors.		In year.	In month.	
All mothers:	169	12.5	41.4	107	19	15.4	26	6	1	23	4	58	31	7	2	1
First month:	113	4.7	16	75	9	7.8	48	6	1	31	3	91	6	6	1	1
Second month:	127	7.6	10	56	6	5.6	68	6	1	35	3	124	5	5	1	1
Third month:	151	6.8	13	43	5	5.1	114	7	1	36	7	164	6	6	1	1
Fourth month:	174	5.9	11	33	5	5.5	154	5	1	33	6	188	6	6	1	1
Fifth month:	197	5.1	11	26	2	2.4	210	7	1	29	7	195	6	6	1	1
Sixth month:	217	4.3	10	20	2	4.7	268	9	2	24	6	227	5	6	1	1
Seventh month:	223	3.2	14	17	3	3.7	428	10	1	18	5	248	5	5	1	1
Eighth month:	215	2.6	8	11	2	4.7	507	11	4	13	5	273	5	5	1	1
Ninth month:	248	1.9	9	5	2	2	507	10	4	9	3	273	5	5	1	1
Tenth month:	190	1.3	4	2	1	2	507	6	1	7	2	273	5	5	1	1
Eleventh month:	111	0.9	11	2	1	2	507	5	5	6	6	273	5	5	1	1
Twelfth month:	118	0.8	11	2	1	2	507	5	5	6	6	273	5	5	1	1
Native-born:	118	0.8	11	2	1	2	507	5	5	6	6	273	5	5	1	1
Foreign-born:	51	10.4	21	19	6	17.4	6	6	1	10	3	30	12	1	1	1
First month:	30	5.4	3	10	1	3.4	12	1	1	8	3	40	8	1	1	1
Second month:	37	4.6	1	8	1	3.4	16	1	1	8	3	55	8	1	1	1
Third month:	369	4.3	3	5	1	3.4	30	2	2	9	3	69	9	1	1	1
Fourth month:	386	3.6	1	4	1	3.4	41	2	2	7	1	78	7	1	1	1
Fifth month:	365	3.3	1	4	1	3.4	55	2	2	2	1	82	6	1	1	1
Sixth month:	373	3.0	4	4	2	11.6	94	2	2	5	2	96	5	2	2	2
Seventh month:	360	1.7	1	1	1	6.7	117	2	2	2	2	98	4	1	1	1
Eighth month:	357	1.7	2	1	1	6.7	137	2	2	2	2	103	4	2	2	2
Ninth month:	335	0.6	2	1	1	6.7	137	2	2	2	2	103	4	2	2	2
Tenth month:	357	0.6	2	1	1	6.7	137	2	2	2	2	103	4	2	2	2
Eleventh month:	335	0.6	2	1	1	6.7	137	2	2	2	2	103	4	2	2	2
Twelfth month:	335	0.6	2	1	1	6.7	137	2	2	2	2	103	4	2	2	2

¹ Rate not shown where base is less than 100.

² Includes 31 infants who died not fed.

³ Including 12 native negro.

INFANT MORTALITY.

TABLE 5.—Monthly death rate by type of feeding, by month of life and nativity of mother—Continued.

Month of life and nativity of mother.	Infants born in 1916.																				
	Total.				Exclusively breast fed.			Partially breast fed.			Artificially fed.			Not fed.		Feeding not reported.					
	Subsequent deaths.				Subsequent deaths.			Subsequent deaths.			Subsequent deaths.			Subsequent deaths.		Subsequent deaths.					
	Infants surviving at beginning of specified month.	In year.	In month.	Per cent of survivors.	Infants surviving at beginning of specified month.	In year.	In month.	Per 1,000 survivors.	Infants surviving at beginning of specified month.	In year.	In month.	Per 1,000 survivors.	Infants surviving at beginning of specified month.	In year.	In month.	Per 1,000 survivors.	Died at once.	Infants surviving at beginning of specified month.	In year.	In month.	
Foreign-born mothers:																					
First month.....	959	126	13.3	36.5	896	88	13	14.7	20	6	1	28	13	1	.....	19	6	2	1	1
Second month.....	924	93	10.1	14.1	832	65	9	10.8	36	5	1	51	22	2	.....	.....	5	1	1	1
Third month.....	911	40	8.8	9	792	48	5	6.4	52	5	1	73	27	3	.....	.....	4	5	4	.....
Fourth month.....	902	71	7.9	10	718	34	5	6.9	84	5	1	95	27	4	.....	.....	5	5	1	.....
Fifth month.....	892	61	6.8	10	664	31	5	7.5	113	3	.....	110	26	5	.....	.....	5	5	1	.....
Sixth month.....	882	51	5.8	9	609	22	2	3.3	155	5	1	113	23	6	.....	.....	5	5	1	.....
Seventh month.....	873	42	4.8	10	463	15	1	2.2	274	7	2	131	19	7	.....	.....	5	5	1	.....
Eighth month.....	863	32	3.7	7	392	10	1	2.6	317	8	1	150	14	5	.....	.....	4	4	4	.....
Ninth month.....	856	25	2.9	5	312	7	2	6.4	370	9	3	170	9	3	.....	.....	4	4	4	.....
Tenth month.....	851	20	2.4	7	.....	5	2	.....	.....	8	1	.....	7	2	.....	.....	4	4	4	.....
Eleventh month.....	844	13	1.5	4	.....	2	1	.....	.....	5	1	.....	6	2	.....	.....	4	4	4	.....
Twelfth month.....	840	9	1.1	9	.....	2	1	.....	.....	4	4	.....	5	5	.....	.....	4	4	4	.....

TABLE 6.—Reason for weaning, by physician's advice, and infant's age at weaning; infants weaned under 15 months.

Reason for, ¹ and advice on, weaning.	Infants born in 1916 weaned under 15 months.															Ex-act age not re-ported.			
	Total.	Age at weaning.																	
		Num-ber.	Per cent tribu-tion.	Un-der 15 days	1 mo.	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	7 mos.	8 mos.	9 mos.	10 mos.	11 mos.		12 mos.	13 mos.	14 mos.
Total	845	100.0	53	22	30	29	39	32	11	39	31	30	63	58	173	88	78	1	
Reason for weaning:																			
Condition of mother.....	520	62.6	53	20	27	27	32	27	9	35	26	26	40	33	73	29	25	1	
Pregnancy.....	145	17.2	1	1	1	1	1	1	2	7	10	10	17	20	30	12	14	1	
Supposed pregnancy.....	32	3.8	1	1	1	1	1	1	1	4	1	4	1	2	4	5	4	2	
Illness of mother.....	60	7.1	10	3	1	3	5	3	1	6	6	1	3	6	7	7	2	3	
Breast milk poor or disagreed with child.....	31	3.7	3	3	2	1	4	3	1	5	1	4	1	4	3	4	2	1	
Breast milk ceased or insufficient.....	182	21.5	30	12	20	24	12	2	2	10	6	9	8	7	2	9	5	3	
Breast infected.....	19	2.2	7	1	2	1	1	1	1	1	1	1	1	1	2	2	1	1	
Other reasons connected with mother's health.....	60	7.1	3	1	2	2	3	3	3	2	3	1	0	10	1	6	2	2	
Condition of infant.....	287	34.0	2	2	3	2	7	3	2	2	4	3	20	11	25	96	54	51	
Illness of infant.....	20	2.4	1	2	1	1	2	1	1	2	3	2	2	2	4	2	4	1	
Refused or unable to nurse (not ill).....	29	3.4	1	1	3	1	5	2	1	2	3	1	14	11	21	90	53	48	
Age.....	238	28.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Separation of mother and child.....	3	0.4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mother's employment.....	2	0.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Other causes of separation.....	1	0.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
All other known reasons.....	18	2.1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Reason not reported.....	8	0.9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Weaned by physician's advice	220	100.0	32	14	15	11	16	15	6	11	10	2	16	12	11	27	15	5	1
Reason for weaning:																			
Condition of mother.....	171	77.7	30	12	13	11	15	14	5	9	9	2	11	8	6	16	7	2	1
Pregnancy.....	13	5.9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Supposed pregnancy.....	3	1.4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Illness of mother.....	46	20.9	8	3	3	3	5	3	1	3	6	1	4	3	7	2	2	1	1
Breast milk poor or disagreed with child.....	21	9.5	3	2	1	1	4	3	1	3	1	1	2	1	3	1	1	1	1
Breast milk ceased or insufficient.....	64	29.1	4	5	10	8	4	4	2	1	1	1	2	1	1	1	1	1	1

¹ As stated by mother.
² Includes 5 cases where infant was never breast fed.
³ Includes 2 cases where infant was never breast fed.
⁴ Includes 15 cases where infant was never breast fed.
⁵ Includes 1 case where infant was weaned more than once.

TABLE 6.—Reason for weaning, by physician's advice, and infant's age at weaning; infants weaned under 15 months—Continued.

Reason for, and advice on, weaning.	Infants born in 1916 weaned under 15 months.													Ex-act age not re-ported.		
	Age at weaning.															
	Total.	15 days under 1 mo.	1 mo.	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	7 mos.	8 mos.	9 mos.	10 mos.	11 mos.		12 mos.	13 mos.
Reason for weaning—Continued.																
Breast infected.....	12	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Other reasons connected with mother's health.....	12	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1
Condition of infant.....	45	20	5	1	1	1	1	1	1	1	1	1	1	1	1	1
Illness of infant.....	10	4	5	1	1	1	1	1	1	1	1	1	1	1	1	1
Refused or unable to nurse (not ill).....	6	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Age.....	29	13	2	2	1	1	1	1	1	1	1	1	1	1	1	1
All other known reasons.....	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Reason not reported.....	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weaned without physician's advice.....	925	26	8	15	18	23	17	5	28	21	28	47	51	47	146	972
Reason for weaning:																
Condition of mother.....	358	23	8	14	10	17	13	4	26	17	24	29	38	27	57	22
Pregnancy.....	132	21	1	1	1	3	3	2	6	16	9	14	18	21	27	10
Supposed pregnancy.....	29	4	0	0	0	0	0	0	3	4	4	4	2	4	4	3
Illness of mother.....	14	2	2	1	1	1	1	1	3	3	1	2	2	2	4	3
Breast milk poor or disagreed with child.....	10	1	1	1	1	1	1	1	2	2	1	2	2	2	2	2
Breast milk ceased or insufficient.....	118	18	7	12	16	8	8	9	9	5	8	6	6	1	2	4
Breast infected.....	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Other reasons connected with mother's health.....	48	7	3	1	1	1	1	1	2	1	2	1	4	9	1	5
Condition of infant.....	242	38	1	1	2	6	2	1	1	3	3	15	9	20	85	45
Illness of infant.....	23	3	7	1	1	2	1	1	1	1	2	1	1	4	2	2
Refused or unable to nurse (not ill).....	209	33	4	1	1	4	1	1	1	3	2	1	12	9	17	79
Age.....	3	0	5	1	1	1	1	1	1	1	1	1	1	1	1	1
Separation of mother and child.....	3	0	5	1	1	1	1	1	1	1	1	1	1	1	1	1
Mother's employment.....	1	0	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Other causes of separation.....	1	0	2	1	1	1	1	1	1	1	1	1	1	1	1	1
All other known reasons.....	16	2	6	3	2	2	2	2	2	2	2	2	2	2	2	2
Reason not reported.....	6	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1

† Includes 2 cases where infant was never breast fed.
 ‡ Includes 3 cases where infant was never breast fed.
 § Includes 1 case where infant was never breast fed.
 ¶ Includes 1 case where no report as to advice on weaning was obtained.
 †† Includes 10 cases where infant was never breast fed.
 ††† Includes 4 cases where infant was never breast fed.

TABLE 7.—Supervision of feeding or access to instructive literature in first year of infant's life, by color and nativity of mother; infants partially or exclusively artificially fed.

Supervision of feeding or access to instructive literature.	Infants born in 1916 partially or exclusively artificially fed at some time during first year.						Negro. ¹	
	Total.		Native white mothers.		Foreign-born white mothers.			
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.		
Total.....	1,053	100.0	313	100.0	729	100.0	11	
No supervision or literature.....	2	632	60.0	116	37.1	511	70.1	5
Supervision or literature.....	421	40.0	197	62.9	218	29.9	6	
Medical supervision.....	305	29.0	148	47.3	152	20.9	5	
Physician only.....	231	21.9	96	30.7	132	18.1	3	
Physician and nurse.....	11	1.0	5	1.6	6	0.8	.....
Physician, nurse, and literature.....	2	0.2	1	0.3	1	0.1	.....
Physician, nurse, other person, and literature.....	2	0.2	2	0.6	.....	.....	.....
Physician and other person.....	7	0.7	2	0.6	4	0.5	1	
Physician, other person, and literature.....	6	0.6	5	1.6	1	0.1	.....
Physician and literature.....	46	4.4	37	11.8	8	1.1	1	
Supervision by nurse.....	14	1.3	5	1.6	9	1.2	.....
Nurse only.....	10	0.9	3	1.0	7	1.0	.....
Nurse and literature.....	4	0.4	2	0.6	2	0.3	.....
Supervision by other ²	45	4.3	14	4.5	30	4.1	1	
Other only.....	35	3.3	9	2.9	25	3.4	1	
Other and literature.....	10	0.9	5	1.6	5	0.7	.....
Literature only.....	57	5.4	30	9.6	27	3.7	.....

¹ Per cent not shown where base is less than 100.² Any person other than physician or nurse.³ Includes 1 "not reported."

TABLE 8.—Prevalence of artificial feeding with fresh cow's milk, with condensed milk, and with proprietary foods before and after weaning under 15 months of age, by color and nativity of mother; infants born in Gary in 1916.

Type of artificial feeding given under 15 months before or after weaning.	Infants born in 1915 to—						Negro mothers. ¹	
	All mothers.		Native white mothers.		Foreign-born white mothers.			
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.		
Total.....	2	1,322	100.0	371	100.0	940	100.0	11
Cow's milk (fresh):								
None given under 15 months.....	2	356	26.9	114	30.7	238	25.3	4
Not reported whether given.....	4	4	0.3	4	0.4
Given, beginning under 15 months.....	962	72.8	257	69.3	698	74.3	7	
Before weaning.....	595	45.0	143	38.5	450	47.9	2	
At or after weaning.....	365	27.6	114	30.7	246	26.2	5	
Not reported whether before or after weaning.....	2	2	0.2	.....	2	0.2	.....
Condensed milk:								
None given under 15 months.....	5	1,080	81.7	276	74.4	796	84.7	8
Not reported whether given.....	5	5	0.4	5	0.5
Given, beginning under 15 months.....	237	17.9	95	25.6	139	14.8	3	
Before weaning.....	84	6.4	27	7.3	57	6.1	.....
At or after weaning.....	152	11.5	68	18.3	81	8.6	3	
Not reported whether before or after weaning.....	1	1	0.1	.....	1	0.1	.....
Proprietary foods:								
None given under 15 months.....	5	1,188	89.9	311	83.8	867	92.2	10
Not reported whether given.....	5	5	0.4	1	0.3	4	0.4
Given, beginning under 15 months.....	129	9.8	59	15.9	69	7.3	1	
Before weaning.....	47	3.6	20	5.4	27	2.9	.....
At or after weaning.....	81	6.1	39	10.5	41	4.4	1	
Not reported whether before or after weaning.....	1	1	0.1	.....	1	0.1	.....

¹ Per cent not shown where base is less than 100.² Excludes 31 infants who died not fed.

INFANT MORTALITY.

TABLE 9.—Age at weaning of infant, by medical supervision of weaning and earnings of chief breadwinner; infants born in Gary in 1916.

Earnings of chief breadwinner.	Infants born in 1916.						
	Total surviving.	Weaned.					
		Total.		By physician's advice.		Without physician's advice.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
SURVIVING AT END OF 3 MONTHS.							
Total.....	1,271	128	10.1	67	5.3	61	4.8
Under \$1,050.....	372	31	8.3	16	4.3	15	4.0
\$1,050, under \$1,850.....	659	67	10.2	38	5.8	29	4.4
\$1,850 and over.....	172	21	12.2	10	5.8	11	6.4
Not reported.....	52	6		2		4	
No earnings and no chief breadwinner.....	16	3		1		2	
SURVIVING AT END OF 6 MONTHS.							
Total.....	1,237	189	15.3	92	7.4	97	7.8
Under \$1,050.....	355	46	13.0	19	5.4	27	7.6
\$1,050, under \$1,850.....	645	97	15.0	50	7.8	47	7.3
\$1,850 and over.....	172	36	20.9	19	11.0	17	9.9
Not reported.....	49	6		3		3	
No earnings and no chief breadwinner.....	16	4		1		3	
SURVIVING AT END OF 9 MONTHS.							
Total.....	1,208	270	22.4	102	8.4	168	13.9
Under \$1,050.....	347	72	20.7	19	5.5	53	15.3
\$1,050, under \$1,850.....	630	133	21.1	55	8.7	78	12.4
\$1,850 and over.....	167	51	30.5	23	13.8	28	16.8
Not reported.....	48	9		3		6	
No earnings and no chief breadwinner.....	16	5		2		3	
SURVIVING AT END OF 12 MONTHS.							
Total.....	1,184	443	37.4	138	11.7	305	25.8
Under \$1,050.....	339	125	36.9	22	6.5	103	30.4
\$1,050, under \$1,850.....	618	217	35.1	75	12.1	142	23.0
\$1,850 and over.....	164	81	49.4	33	20.1	48	29.3
Not reported.....	48	14		5		9	
No earnings and no chief breadwinner.....	15	6		3		3	
SURVIVING AT END OF 15 MONTHS.							
Total.....	1,162	766	65.9	182	15.7	594	50.3
Under \$1,050.....	326	213	65.3	30	9.2	183	56.1
\$1,050, under \$1,850.....	610	345	56.1	97	15.9	288	47.2
\$1,850 and over.....	164	130	79.3	43	26.2	87	53.0
Not reported.....	47	27		8		19	
No earnings and no chief breadwinner.....	15	11		4		7	

¹ Based on total survivors. Not shown where base is less than 100.

TABLE 10.—Prevalence of artificial feeding with fresh cow's milk, with condensed milk, and with proprietary foods before and after weaning under 15 months of age, by annual earnings of chief breadwinner; infants born in Gary in 1916.

Type of artificial feeding given under 15 months before or after weaning.	Infants born in 1916.								No. earnings, no chief breadwinner, and not reported. ¹
	Total.		Annual earnings of chief breadwinner.						
			Under \$1,050		\$1,050, under \$1,850.		\$1,850 and over.		
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	1,322	100.0	382	100.0	691	100.0	177	100.0	72
Cow's milk (fresh):									
None given under 15 months.....	356	26.9	95	24.9	203	29.4	39	22.0	19
Not reported whether given.....	4	0.3	2	0.5	2	0.3			
Given, beginning under 15 months...:	962	72.8	285	74.6	486	70.3	138	78.0	53
Before weaning.....	595	45.0	180	47.1	321	46.5	64	36.2	30
At or after weaning.....	365	27.6	105	27.5	164	23.7	73	41.2	23
Not reported whether before or after weaning.....	2	0.2			1	0.1	1	0.6	
Condensed milk:									
None given under 15 months.....	1,080	81.7	320	83.8	566	81.9	134	75.7	60
Not reported whether given.....	5	0.4	3	0.8	2	0.3			
Given, beginning under 15 months...:	237	17.9	59	15.4	123	17.8	43	24.3	12
Before weaning.....	84	6.4	24	6.3	43	6.2	14	7.9	3
At or after weaning.....	152	11.5	34	8.9	80	11.6	29	16.4	9
Not reported whether before or after weaning.....	1	0.1	1	0.3					
Proprietary foods:									
None given under 15 months.....	1,188	89.9	347	90.8	623	90.2	150	84.7	68
Not reported whether given.....	5	0.4	2	0.5	2	0.3	1	0.6	
Given, beginning under 15 months...:	129	9.8	33	8.6	66	9.6	26	14.7	4
Before weaning.....	47	3.6	9	2.4	25	3.6	10	5.6	3
At or after weaning.....	81	6.1	24	6.3	41	5.9	15	8.5	1
Not reported whether before or after weaning.....	1	0.1					1	0.6	

¹ Per cent not shown where base is less than 100.

² Excludes 31 infants who died not fed.

³ Includes 5 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 11.—Duration of household help during pregnancy, by kind of household help and color and nativity of mother; births in Gary in 1916.

Kind of household help during pregnancy and color and nativity of mother.	Births in 1916.														
	Total.	No household help during pregnancy.		Household help preceding confinement.								Household help early in pregnancy only.		Household help not reported.	
				Less than 2 weeks.		2 weeks, under 1 month.		1 month, under 3 months.		3 months and over.					
				No.	Per ct. ¹	No.	Per ct. ¹	No.	Per ct. ¹	No.	Per ct. ¹				
All mothers.....	1,393	718	51.5	38	2.7	65	4.7	136	9.8	416	29.9	6	0.4	14	1.0
No household help.....	720	718	99.9							1				1	.1
No household duties.....	12					1		3		8					
Household help.....	662			38	5.7	64	9.7	133	20.1	408	61.6	6	.9	13	2.0
Adult doing work other than laundry.....	379			34	9.0	44	11.6	72	19.0	218	57.5	5	1.3	6	1.6
Hired.....	157			15	9.6	19	12.1	26	16.6	91	58.0	3	1.9	3	1.9
Outsider, not hired.....	107			13	12.1	22	20.6	31	29.0	39	36.4			2	1.9
Member household.....	115			6	5.2	3	2.6	15	13.0	88	76.5	2	1.7	1	.9
Laundry only.....	224			4	1.8	19	8.5	59	26.3	134	59.8	1	.4	7	3.1
Child only.....	58					1		2		55					
Not reported.....	1									1					
Native white mothers.....	394	111	28.2	12	3.3	30	7.6	60	15.2	170	43.1	3	.8	7	1.8
No household help.....	111	111	100.0												
No household duties.....	8							3		5					
Household help.....	275			13	4.7	30	10.9	57	20.7	165	60.0	3	1.1	7	2.5
Adult doing work other than laundry.....	181			13	7.2	26	14.4	32	17.7	104	57.5	3	1.7	3	1.7
Hired.....	87			5		10		8		59		3		2	
Outsider, not hired.....	57			6		14		17		19				1	
Member household.....	37			2		2		7		26					
Laundry only.....	89					4		25		56				4	
Child only.....	5									5					
Foreign-born white mothers.....	987	602	61.0	25	2.5	34	3.4	75	7.6	243	24.6	3	.3	5	.5
No household help.....	602	602	100.0												
No household duties.....	4					1				3					
Household help.....	381			25	6.6	33	8.7	75	19.7	240	63.0	3	.8	5	1.3
Adult doing work other than laundry.....	195			21	10.8	17	8.7	40	20.5	112	57.4	2	1.0	3	1.5
Hired.....	70			10		9		18		32				1	
Outsider, not hired.....	49			7		7		14		20				1	
Member household.....	76			4		1		8		60		2		1	
Laundry only.....	132			4	3.0	15	11.4	33	25.0	77	58.3	1	.8	2	1.5
Child only.....	53					1		2		50					
Not reported.....	1									1					
Negro mothers ²	12	5				1		1		3				2	
No household help.....	6	5												1	
Household help.....	6					1		1		3				1	
Adult doing work other than laundry.....	3					1				2					
Outsider, not hired.....	1					1									
Member household.....	2									2					
Laundry only.....	3							1		1				1	

¹ Not shown where base is less than 100.
² The negro mothers were all native born.

TABLE 12.—Source of instruction in prenatal care, by color and nationality of mother; confinements in Gary in 1916.

Source of instruction in prenatal care.	Confinements in 1916 of mothers of specified nationality.														
	Total confinements in 1916.		Native white.		Foreign-born white.								Negro ¹		
					Total.		Polish.		Serbian and Croatian.		Slovak.			All other.	
	Number.	Per cent dis-tribution.	Number.	Per cent dis-tribution.	Number.	Per cent dis-tribution.	Number.	Per cent dis-tribution.	Number.	Per cent dis-tribution.	Number.	Per cent dis-tribution.	Number.	Per cent dis-tribution.	
Total.....	1,376	100.0	392	100.0	972	100.0	272	100.0	159	100.0	135	100.0	406	100.0	12
No prenatal instruction.....	924	67.2	97	24.7	820	84.4	243	89.3	148	93.1	125	92.6	304	74.9	7
Prenatal instruction.....	451	32.8	295	75.3	151	15.5	29	10.7	10	6.3	10	7.4	102	25.1	5
Physician only.....	283	20.6	178	45.4	101	10.4	17	6.3	8	5.0	8	5.9	68	16.7	4
Physician and nurse.....	6	.4	6	1.5											
Physician, nurse and literature.....	10	.7	9	2.3	1	.1								1	.2
Physician and literature.....	94	6.8	80	20.4	13	1.3	1	.4					12	3.0	1
Nurse only.....	24	1.7	9	2.3	15	1.5	3	1.1	2	1.3			10	2.5	
Nurse and literature.....	3	.2			3	.3	1	.4					2	.5	
Literature only.....	31	2.3	13	3.3	18	1.9	7	2.6			2	1.5	9	2.2	
Not reported whether prenatal instruction received....	1	.1			1	.1			1	.6					

¹ Per cent not shown where base is less than 100.

² Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

TABLE 13.—Grade of prenatal care, by color and nationality of mother; confinements in Gary in 1916.

Color and nationality of mother.	Confinements in 1916 of mothers—														
	Total.	Receiving no prenatal care.		Receiving prenatal care of specified grade.								Not reported.			
				Total.		A.		B.		C.		Grade un-known.		Whether prenatal care received.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	1,376	966	70.2	406	29.5	33	2.4	54	3.9	318	23.1	1	0.1	4	0.3
Native white.....	392	113	28.8	276	70.4	27	6.9	37	9.4	211	53.8	1	.3	3	.8
Foreign-born white.....	972	846	87.0	125	12.9	6	.6	16	1.6	103	10.6			1	.1
Polish.....	272	252	92.6	20	7.4	2	.7	4	1.5	14	5.1				
Serbian and Croatian.....	159	149	93.7	9	5.7	1	.6	1	.6	7	4.4			1	.6
Slovak.....	135	127	94.1	8	5.9			1	.7	7	5.2				
All other.....	406	318	78.3	88	21.7	3	.7	10	2.5	75	18.5				
Negro.....	12	7		5				1		4					

¹ Not shown where base is less than 100.

² Includes 17 confinements which resulted in twin births and 5 instances where mother had two confinements in 1916.

TABLE 14.—Grade of postnatal care, by attendant at confinement; births in Gary in 1916.

Attendant at confinement period.	Births in 1916 to mothers—														
	Total.	Receiving no care by attendant after delivery.		Receiving specified grade of postnatal care.										Grade not reported. ¹	
				Total.		Grade A.		Grade B.		Grade C.		Grade D.			
		No.	Per cent. ²	No.	Per cent. ²	No.	Per cent. ²	No.	Per cent. ²	No.	Per cent. ²	No.	Per cent. ²	No.	Per cent. ²
Total.....	1,393	48	3.4	1,349	96.6	363	26.1	736	52.8	161	11.6	48	3.4	37	2.7
Physician only. ³	517	8	1.5	509	98.5	156	30.2	177	34.2	132	25.5	31	6.0	13	2.5
Physician and midwife.....	66	25	.....	41	.....	1	.....	10	.....	11	.....	15	.....	4	.....
Midwife only.....	763	1	.....	763	100.0	195	25.6	540	70.8	16	2.1	2	0.3	10	1.3
Other.....	33	1	.....	32	.....	11	.....	9	.....	2	.....	.....	.....	10	.....
No attendant.....	14	14	100.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Includes 21 cases in which attendant at confinement was member of household and 2 cases in which mother died during confinement.

² Not shown where base is less than 100.

³ Includes 1 case with physician and "other" in attendance.

TABLE 15.—Duration of nursing care at confinement, by color and nationality of mother; confinements in Gary in 1916.

Color and nationality of mother.	Confinements in 1916 of mothers with nursing care.										
	Total confinements in 1916.	Less than 7 days.		7 days, less than 10.		10 days, less than 14.		14 days or over.		Duration not reported.	
		No.	Per cent. ¹	No.	Per cent. ¹	No.	Per cent. ¹	No.	Per cent. ¹	No.	Per cent. ¹
Total.....	1,376	108	7.8	506	36.8	216	15.7	543	39.5	3	0.2
Native white.....	392	5	1.3	52	13.3	113	28.8	221	56.4	1	.3
Foreign-born white.....	972	102	10.5	449	46.2	102	10.5	317	32.6	2	.2
Polish.....	272	48	17.6	132	48.5	18	6.6	74	27.2	.....	.....
Serbian and Croatian.....	159	15	9.4	63	39.6	20	12.6	59	37.1	2	1.3
Slovak.....	135	7	5.2	78	57.8	9	6.7	41	30.4	.....	.....
All other.....	406	32	7.9	176	43.3	55	13.5	143	35.2	.....	.....
Negro.....	12	1	.....	5	.....	1	.....	5	.....	.....	.....

¹ Not shown where base is less than 100.

² Includes 17 confinements which resulted in twin births and 5 instances where mother had 2 confinements in 1916.

³ Includes 1 mother who died at childbirth; 1 who died 4 days after delivery.

TABLE 16.—Duration of household help during lying-in period, by kind of household help and days in bed; births in Gary in 1916.

Kind of household help during lying-in period and days in bed.	Births in 1916.														
	Total.	No household help during lying-in period.		Household help during lying-in period.										Household help not reported.	
		Number.	Per cent. ¹	Less than 1 week.		1 week, less than 2.		2 weeks, less than 4.		4 weeks, less than 6.		6 weeks or over.		Number.	Per cent. ¹
				Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹		
Total.....	1,393	7	0.5	168	12.1	384	27.6	411	29.5	117	8.4	298	21.4	8	0.6
Mothers in hospital for confinement.....	122	3	2.5	7	5.7	9	7.4	28	23.0	5	4.1	65	53.3	5	4.1
No household duties.....	15					1				2		10			
No household help (confined at home).....	4	4													
Household help.....	1,252			161	12.9	374	29.9	381	30.4	110	8.8	223	17.8	3	.2
In bed less than 4 days.....	121			59	48.8	30	24.8	19	15.7	1	.8	12	9.9		
Household help—															
Adult doing work other than laundry.....	116			58	50.0	30	25.9	18	15.5	1	.9	9	7.8		
Hired.....	15			6		5		4							
Outsider, not hired.....	40			21		10		8		1					
Member household.....	61			31		15		6				9			
Child only.....	5			1				1				3			
In bed 4 days but less than 7 days.....	171			65	38.0	47	27.5	33	19.3	11	6.4	15	8.8		
Household help—															
Adult doing work other than laundry.....	167			63	37.7	47	28.1	32	19.2	11	6.6	14	8.4		
Hired.....	40			9		16		10		4					
Outsider, not hired.....	62			26		10		17		5		4			
Member household.....	65			28		21		5		2		9			
Laundry only.....	1							1							
Child only.....	3			2								1			
In bed 7 days but less than 10 days.....	437			29	6.6	218	49.9	109	24.9	28	6.4	52	11.9	1	.2
Household help—															
Adult doing work other than laundry.....	426			28	6.6	215	50.5	106	24.9	28	6.6	48	11.3	1	.2
Hired.....	139			8	5.8	54	38.8	44	31.7	12	8.6	20	14.4	1	.7
Outsider, not hired.....	171			11	6.4	89	52.0	47	27.5	14	8.2	10	5.8		
Member household.....	116			9	7.8	72	62.1	15	12.9	2	1.7	18	15.5		
Laundry only.....	1							1							
Child only.....	6					2						4			
Not reported.....	4			1		1		2							
In bed 10 days but less than 14 days.....	239			4	1.7	59	24.7	83	34.7	33	13.8	60	25.1		
Household help—															
Adult doing work other than laundry.....	235			4	1.7	57	24.3	81	34.5	33	14.0	60	25.5		
Hired.....	93			3		23		33		14		20			
Outsider, not hired.....	102					22	21.6	43	42.2	16	15.7	21	20.6		
Member household.....	40			1		12		5		3		19			
Laundry only.....	1							1							
Child only.....	1					1									
Not reported.....	2					1		1							
In bed 14 days and over.....	282			4	1.4	20	7.1	137	48.6	37	13.1	83	29.4	1	.4
Household help—															
Adult doing work other than laundry.....	277			4	1.4	19	6.9	137	49.5	37	13.4	80	28.9		
Hired.....	115			2	1.7	12	10.4	44	38.3	19	16.5	38	33.0		
Outsider, not hired.....	105			2	1.9	7	6.7	61	58.1	12	11.4	23	21.9		
Member household.....	57							32		6		19			
Laundry only.....	1											1			
Child only.....	2											2			
Not reported.....	2					1								1	
Number days in bed not reported.....	2											1		1	

¹ Not shown where base is less than 100.

TABLE 17.—Duration of household help during lying-in period, by kind of household help and color and nativity of mother; births in Gary in 1916.

Kind of household help during lying-in period, and color and nativity of mother.	Births in 1916.												
	Total.	No household help during lying-in period.		Household help during lying-in period.								Household help not reported.	
				Less than 1 week.		1 week, less than 2.		2 weeks, less than 4.		4 weeks or over.			
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	1,393	7	0.5	168	12.1	384	27.6	411	29.5	415	29.8	8	0.6
No household help and not reported..	10	7										3	
No household duties.	15					1	6.7	2	13.3	12	80.0		
Household help.....	1,368			168	12.3	383	28.0	409	29.9	403	29.5	5	.4
Adult doing work other than laundry..	1,319			164	12.4	376	28.5	399	30.3	376	28.5	4	.3
Hired.....	444			31	7.0	112	25.2	141	31.8	158	35.6	2	.5
Outsider, not hired.....	513			62	12.1	141	27.5	191	37.2	117	22.8	2	.4
Member household.....	362			71	19.6	123	34.0	67	18.5	101	27.9		
Laundry only.....	19							6		13			
Child only.....	21			3		3		1		14			
Not reported.....	9			1		4		3				1	
Native white..	394	2	.5	6	1.5	65	16.5	126	32.0	191	48.5	4	1.0
No household help and not reported..	3	2										1	
No household duties.	9					1		1		7			
Household help.....	382			6	1.6	64	16.8	125	32.7	184	48.2	3	.8
Adult doing work other than laundry..	361			6	1.7	60	16.6	121	33.5	172	47.6	2	.6
Hired.....	153			4	2.6	27	17.6	44	28.8	78	51.0		
Outsider, not hired.....	158			1	.6	26	16.5	71	44.9	58	36.7	2	1.3
Member household.....	50			1		7		6		36			
Laundry only.....	15							4					
Child only.....	3					2				1			
Not reported.....	3					2						1	
Foreign - born white.....	987	4	.4	162	16.4	316	32.0	283	28.7	219	22.2	3	.3
No household help and not reported..	5	4										1	
No household duties.	6							1		5			
Household help.....	976			162	16.6	316	32.4	282	28.9	214	21.9	2	.2
Adult doing work other than laundry..	948			158	16.7	313	33.0	276	29.1	199	21.0	2	.2
Hired.....	289			27	9.3	85	29.4	96	33.2	79	27.3		
Outsider, not hired.....	348			61	17.5	112	32.2	119	34.2	56	16.1		
Member household.....	311			70	22.5	116	37.3	61	19.6	64	20.6		
Laundry only.....	4							2		2			
Child only.....	18			3		1		1		13			
Not reported.....	6			1		2		3					
Negro.....	12	1				3		2		5		1	
No household help and not reported..	2	1										1	
Household help.....	10					3		2		5			
Adult doing work other than laundry..	10					3		2		5			
Hired.....	2							1		1			
Outsider, not hired.....	7					3		1		3			
Member household.....	1									1			

¹ Not shown where base is less than 100.

TABLE 18.—Number of days in bed following confinement, by annual earnings of chief breadwinner; births in Gary in 1916.

Annual earnings of chief breadwinner.	Births in 1916.														
	Total.	Number of days in bed following confinement.												Not re-ported.	
		Less than 1 day.		1 day, less than 4.		4 days, less than 7.		7 days, less than 10.		10 days, less than 14.		14 days or over.			
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	1,393	4 0.3	120	8.6	172	12.3	457	32.8	200	20.8	345	24.8	5	0.4	
Under \$1,050.....	403	2 0.5	52	12.9	54	13.4	155	38.5	51	12.7	86	21.3	3	0.7	
\$1,050, under \$1,850.....	727	2 0.3	60	8.3	93	12.8	229	31.5	160	22.0	182	25.0	1	0.1	
\$1,850 and over.....	185	.....	6	3.2	16	8.6	45	24.3	65	35.1	53	28.6	.....	.....
No earnings, no chief breadwinner, and not reported.....	* 78	.....	2	.....	9	.....	28	.....	14	.....	24	.....	1	.....

¹ Not shown where base is less than 100.

* Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 19.—Duration of household help during lying-in period, by kind of household help and earnings of chief breadwinner; births in Gary in 1916.

Kind of household help and annual earnings of chief breadwinner.	Births in 1916.												
	Total.	No household help during lying-in period.		Household help during lying-in period.								Household help not reported.	
				Less than 1 week.		1 week, less than 2.		2 weeks, less than 4.		4 weeks or over.			
		Num. ber.	Per cent. ¹	Num. ber.	Per cent. ¹	Num. ber.	Per cent. ¹	Num. ber.	Per cent. ¹	Num. ber.	Per cent. ¹	Num. ber.	Per cent. ¹
All mothers...	1,393	7	0.5	168	12.1	384	27.6	411	29.5	415	29.8	8	0.6
Under \$1,050.....	420	4	1.0	65	15.5	145	34.5	114	27.1	91	21.7	1	0.2
No household help and not reported.	4	4											
No household duties.....	3									3			
Household help.....	413			65	15.7	145	35.1	114	27.6	88	21.3	1	0.2
Adult doing work other than laundry.....	401			64	16.0	143	35.7	113	28.2	80	19.9	1	0.2
Hired.....	104			9	8.7	38	36.5	35	33.7	21	20.2	1	1.0
Outsider, not hired.....	154			23	14.9	52	33.8	52	33.8	27	17.5		
Member household.....	143			32	22.4	53	37.1	26	18.2	32	22.4		
Laundry only.....	1									1			
Child only.....	9					1		1		7			
Not reported.....	2			1									
\$1,050, under \$1,850..	727	3	0.4	89	12.2	203	27.9	230	31.6	198	27.2	4	0.6
No household help and not reported.	5	3										2	
No household duties.....	10					1		2		7			
Household help.....	712			89	12.5	202	28.4	228	32.0	191	26.8	2	0.3
Adult doing work other than laundry.....	685			86	12.6	199	29.1	222	32.4	177	25.8	1	0.1
Hired.....	221			17	7.7	63	28.5	78	35.3	63	28.5		
Outsider, not hired.....	282			32	11.3	77	27.3	110	39.0	62	22.0	1	0.4
Member household.....	182			37	20.3	59	32.4	34	18.7	52	28.6		
Laundry only.....	12							4		8			
Child only.....	9			3						6			
Not reported.....	6					3		2				1	
\$1,850 and over.....	185			10	5.4	19	10.3	51	27.6	103	55.7	2	1.1
No household help and not reported.	1											1	
No household duties.....	2									2			
Household help.....	182			10	5.5	19	10.4	51	28.0	101	55.5	1	0.5
Adult doing work other than laundry.....	174			10	5.7	18	10.3	48	27.6	97	55.7	1	0.6
Hired.....	95			3	7.7	7		22	35.3	63	28.5		
Outsider, not hired.....	59			6		7		23		22		1	
Member household.....	20			1		4		3		12			
Laundry only.....	5							2		3			
Child only.....	2					1				1			
Not reported.....	1							1					
Earnings not reported.....	61			4		17		16		23		1	
Household help.....	61			4		17		16		23		1	
Adult doing work other than laundry.....	59			4		16		16		22		1	
Hired.....	24			2		4		6		11		1	
Outsider, not hired.....	18			1		5		6		6			
Member household.....	17			1		7		4		5			
Laundry only.....	1									1			
Child only.....	1					1							

¹ Not shown where base is less than 100.² Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 20.—Prematurity, by order of pregnancy and age of mother; births in Gary in 1916.

Prematurity and order of pregnancy.	Births in 1916.						
	Total.		Age of mother.				
	Number	Per cent distribution.	Under 20.	20 to 29.	30 to 39.	40 and over.	Not reported.
Total.....	1,303	100.0	99	824	396	44	30
Premature.....	66	4.7	12	37	14	3	
Full term.....	1,326	95.2	87	787	381	41	30
Not reported.....	1	0.1			1		
First pregnancy.....	258	100.0	60	173	17		2
Premature.....	21	8.1	10	11			
Full term.....	237	91.9	56	162	17		2
Second pregnancy.....	285	100.0	28	215	37	1	4
Premature.....	8	2.8	2	6			
Full term.....	277	97.2	26	209	37	1	4
Third pregnancy.....	253	100.0	5	193	45	1	9
Premature.....	10	4.0		6	4		
Full term.....	242	95.7	5	187	40	1	9
Not reported.....	1	0.4			1		
Fourth pregnancy.....	182	100.0		128	44	8	2
Premature.....	10	5.5		8	1	1	
Full term.....	172	94.5		120	43	7	2
Fifth pregnancy.....	140	100.0		62	68	5	5
Premature.....	3	2.1		1	2		
Full term.....	137	97.9		61	66	5	5
Sixth or later pregnancy.....	272	100.0		53	184	28	7
Premature.....	14	5.1		5	7	2	
Full term.....	258	94.9		48	177	26	7
Order of pregnancy not reported.....	3				1	1	1
Full term.....	3				1	1	1

TABLE 21.—Interval from preceding confinement, by condition of preceding issue; births in Gary in 1916 second and later in order of issue.

Condition of preceding issue.	Births in 1916 second and later in order of issue.												
	Total.	Interval from preceding confinement.											
		Under 11 months.	12 months, under 15.	15 months, under 18.	18 months, under 24.	24 months and over.	Not reported.						
	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	
Total.....	1,135	42	3.7	97	8.5	142	12.5	309	27.2	522	46.0	23	2.0
Miscarriage.....	49	9		6		3		5		13		13	
Stillbirth.....	35	5		11		8		6		5			
Live birth.....	1,049	28	2.7	80	7.6	131	12.5	298	28.4	504	48.0	8	0.8
Survival.....	936	15	1.6	55	5.9	114	12.2	283	30.2	464	49.6	5	0.5
Infant death.....	113	13	11.5	25	22.1	17	15.0	15	13.3	40	35.4	3	2.7
Condition not reported.....	2											2	

¹ Not shown where base is less than 100.

TABLE 22.—*Employment of chief breadwinner, by color and nativity of mother and earnings of chief breadwinner; births in Gary in 1916.*

Employment of chief breadwinner and color and nativity of mother.		Births in 1916.								
		Total.		Annual earnings of chief breadwinner.						No earnings, no chief breadwinner, and not reported. ¹
				Under \$1,050.		\$1,050 under \$1,550.		\$1,550 and over.		
Number.	Per cent distribution. ¹	Number.	Per cent distribution. ¹	Number.	Per cent distribution. ¹	Number.	Per cent distribution. ¹			
All mothers.....	1,383 100.0	408 100.0	77 100.0	185 100.0				78		
Employer.....	106 7.6	14 3.5	31 4.0	42 22.7				19		
Own account.....	62 4.5	15 3.7	25 3.3	12 6.5				10		
Professional.....	5 0.4	1 0.2		7 3.8						
Other.....	34 2.5	14 3.5	25 3.3	5 2.7				10		
Wage earner.....	1,210 86.9	372 92.3	41 53.3	131 70.8				38		
Steel.....	916 65.5	272 66.7	307 39.7	112 60.5				20		
Other.....	291 21.0	86 21.6	104 13.5	19 10.3				15		
Not reported.....	3 0.2		2 2.6					1		
Not reported whether employer or wage earner.....	15 1.1	2 0.5						13		
Native white mothers.....	394 100.0	41 100.0	225 100.0	104 100.0				24		
Employer.....	33 8.4	1 2.4	9 4.0	15 14.4				5		
Own account.....	14 3.6	3 7.3	6 2.7	5 4.8						
Professional.....	5 1.3			5 4.8						
Other.....	9 2.3	3 7.3	6 2.7							
Wage earner.....	341 86.7	37 87.7	210 93.3	81 77.9				15		
Steel.....	276 70.0	17 39.1	130 57.8	64 61.5				7		
Other.....	135 34.3	20 46.4	80 35.5	17 16.3				8		
Not reported whether employer or wage earner.....	4 1.0							4		
Foreign-born white mothers.....	987 100.0	356 100.0	496 100.0	80 100.0				54		
Employer.....	73 7.4	15 4.2	22 4.4	24 30.0				14		
Own account.....	47 4.7	11 3.1	19 3.8	7 8.8				10		
Professional.....	3 0.3	1 0.3		2 2.5						
Other.....	44 4.5	10 2.8	19 3.8	5 6.3				10		
Wage earner.....	864 86.9	332 93.7	454 91.4	69 86.3				21		
Steel.....	700 70.0	260 73.0	360 72.6	47 58.8				13		
Other.....	133 13.3	72 20.1	22 4.4	22 27.5				7		
Not reported.....	3 0.3		3 0.6					1		
Not reported whether employer or wage earner.....	11 1.1	2 0.6						9		
Negro mothers.....	12 100.0	4 100.0	7 100.0	1 100.0						
Own account.....	1 8.3	1 25.0								
Other.....	1 8.3	1 25.0								
Wage earner.....	11 91.7	3 75.0	7 100.0	1 100.0						
Steel.....	6 50.0		7 100.0	1 100.0						
Other.....	3 25.0	3 75.0								

¹ Percent not shown where base is less than 100.
² Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 23.—Aggregate family earnings, by earnings supplementary to those of chief breadwinner; births in Gary in 1916.

Supplementary earnings.	Births in 1916.								
	Total.	Aggregate family earnings.							
		Under \$1,050.		\$1,050 under \$1,850.		\$1,850 and over.		Not reported.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	1,393	320	23.0	738	53.0	257	18.4	78	5.6
No supplementary earnings.....	890	224	25.2	484	54.4	134	15.1	47	5.3
Supplementary earnings.....	448	81	18.1	242	54.0	117	26.1	8	1.8
Not reported.....	56	15	.....	12	.....	6	.....	23	.....

¹ Not shown where base is less than 100.

TABLE 24.—Employment of mother, by color and nativity of mother and earnings of chief breadwinner; births in Gary in 1916.

Employment and color and nativity of mother.	Births in 1916.								
	Total.		Annual earnings of chief breadwinner.						No earnings, no chief breadwinner, and not reported. ¹
			Under \$1,050.		\$1,050, under \$1,850.		\$1,850 and over.		
			Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
All mothers.....	1,393	100.0	403	100.0	727	100.0	185	100.0	78
Employed.....	475	34.1	165	40.9	226	31.1	54	29.2	30
Not employed.....	917	65.8	237	58.8	501	68.9	131	70.8	48
Not reported.....	1	(²)	1	.2	.....	.....	.....	.....	.....
Native white.....	394	100.0	41	.....	225	100.0	104	100.0	21
Employed.....	117	29.7	18	.....	64	28.4	29	27.9	6
Not employed.....	277	70.3	23	.....	161	71.6	75	72.1	18
Foreign-born white.....	987	100.0	358	100.0	495	100.0	80	.....	54
Employed.....	352	35.7	145	40.5	159	32.1	24	.....	24
Not employed.....	634	64.2	212	59.2	336	67.9	56	.....	30
Not reported.....	1	.1	1	.3	.....	.....	.....	.....	.....
Negro.....	12	.....	4	.....	7	.....	1	.....	.....
Employed.....	6	.....	2	.....	3	.....	1	.....	.....
Not employed.....	6	.....	2	.....	4	.....	.....	.....	.....

¹ Per cent not shown where base is less than 100.

² Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

³ Less than one-tenth of 1 per cent.

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TABLE 25.—*Employment of mother, by annual earnings and color and nativity of mother; births in Gary in 1916.*

Employment and color and nativity of mother.	Births in 1916.								Not reported.
	Total.		Mother's annual earnings in 1917.						
			None.		Under \$200.		\$200 and over.		
	Num-ber.	Per cent dis-tribu-tion. ¹	Num-ber.	Per cent dis-tribu-tion.	Num-ber.	Per cent dis-tribu-tion.	Num-ber.	Per cent dis-tribu-tion.	
All mothers	1,398	100.0	917	100.0	225	100.0	191	100.0	60
Not employed	917	65.8	917	100.0					
Employed	475	34.1			225	100.0	191	100.0	59
Lodgers	409	29.4			197	87.6	179	93.7	33
Other work only	66	4.7			28	12.4	12	6.3	26
Not reported	1	(²)							1
Native white mothers ..	394	100.0	277	100.0	67		35		15
Not employed	277	70.3	277	100.0					
Employed	117	29.7			67		35		15
Lodgers	93	23.6			57		31		5
Other work only	24	6.1			10		4		10
Foreign-born white mothers ..	987	100.0	634	100.0	155	100.0	154	100.0	44
Not employed	634	64.2	634	100.0					
Employed	352	35.7			155	100.0	154	100.0	43
Lodgers	313	31.7			139	89.7	147	95.5	27
Other work only	39	4.0			16	10.3	7	4.5	16
Not reported	1	.1							1
Negro mothers	12		6		3		2		1
Not employed	6		6						
Employed	6				3		2		1
Lodgers	3				1		1		1
Other work only	3				2		1		

¹ Per cent not shown where base is less than 100.² Less than one-tenth of 1 per cent.

TABLE 26.—*Infant mortality rates, by literacy and color and nationality of mother; births in Gary in 1916.*

Literacy and color and nationality of mother.	Total births.	Live births.	Infant deaths	Infant mortality rate. ¹
All mothers.....	1,393	1,353	169	124.9
Literate.....	1,029	1,001	120	119.9
Illiterate.....	363	351	49	139.6
Not reported.....	1	1		
Native white mothers.....	394	383	37	96.6
Literate.....	392	381	36	94.5
Illiterate.....	2	2	1	
Foreign-born white mothers.....	987	969	128	133.5
Literate.....	625	609	80	131.4
Illiterate.....	361	349	48	137.5
Not reported.....	1	1		
Polish.....	275	263	39	148.3
Literate.....	168	160	20	125.0
Illiterate.....	107	103	19	184.5
Serbian and Croatian.....	162	158	20	126.6
Literate.....	74	74	10	
Illiterate.....	87	83	10	
Not reported.....	1	1		
Slovak.....	135	132	15	113.6
Literate.....	99	97	9	
Illiterate.....	36	35	6	
All other.....	415	406	54	133.0
Literate.....	294	278	41	147.5
Illiterate.....	131	128	13	101.6
Negro mothers.....	12	11	4	
Literate.....	12	11	4	

¹ Not shown where base is less than 100.

TABLE 27.—*Infant mortality and stillbirth rates, by earnings of chief breadwinner and literacy of mother; births in Gary in 1916.*

Annual earnings of chief breadwinner and literacy of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ¹
		Number.	Per cent. ²			
Total.....	1,393	40	2.9	1,353	169	124.9
Under \$1,050.....	403	11	2.7	392	54	137.8
\$1,050, under \$1,850.....	727	19	2.6	708	90	127.1
\$1,850 and over.....	185	6	3.2	179	16	89.4
No earnings, no chief breadwinner, and not reported.....	78	4		74	9	
Literate mothers.....	1,029	28	2.7	1,001	120	119.9
Under \$1,050.....	245	8	3.3	237	37	156.1
\$1,050, under \$1,850.....	555	14	2.5	541	62	114.6
\$1,850 and over.....	176	5	2.8	171	15	87.7
No earnings, no chief breadwinner, and not reported.....	53	1		52	6	
Illiterate mothers.....	363	12	3.3	351	49	139.6
Under \$1,050.....	158	3	1.9	155	17	109.7
\$1,050, under \$1,850.....	171	5	2.9	166	28	168.7
\$1,850 and over.....	9	1		8	1	
No earnings, no chief breadwinner, and not reported.....	25	3		22	3	
Literacy not reported.....	1			1		
\$1,050, under \$1,850.....	1			1		

¹ Not shown where base is less than 100.

² Includes 6 instances of "no chief breadwinner" and 11 of "no earnings."

TABLE 28.—*Literacy and nationality of mother, by age at 1916 confinement; births in Gary in 1916 to foreign-born white mothers.*

Literacy and nationality of mother.	Births in 1916 to foreign-born white mothers.							
	Total.	Age of mother.						No report.
		Under 20 years.	20 years, under 25 years.	25 years, under 30 years.	30 years, under 35 years.	35 years, under 40 years.	40 years, and over.	
Total.....	987	50	304	274	216	80	33	30
Literate.....	625	38	219	173	126	41	18	10
Illiterate.....	361	12	85	100	90	39	15	20
Not reported.....	1			1				
Polish.....	275	16	92	73	154	25	9	6
Literate.....	168	19	64	43	31	12	4	2
Illiterate.....	107	7	28	30	20	13	5	4
Serbian and Croatian.....	162	6	49	46	33	13	8	7
Literate.....	74	4	29	19	14	4	2	2
Illiterate.....	87	2	20	26	19	9	6	5
Not reported.....	1			1				
Slovak.....	135	7	41	38	28	11	3	7
Literate.....	99	6	30	30	23	6	1	3
Illiterate.....	36	1	11	8	5	5	2	4
Magyar.....	64	8	20	12	18	2	3	1
Literate.....	59	8	18	12	15	2	3	1
Illiterate.....	5		2		3			
Italian.....	60	4	17	15	14	6	2	2
Literate.....	31	3	13	18	8	2	2	
Illiterate.....	29	1	4	7	11	4		2
Lithuanian and Lettish....	54	2	9	19	12	8	2	2
Literate.....	19	2	4	5	4	2	1	1
Illiterate.....	35		5	14	8	6	1	1
German.....	41		16	11	8	4	2	
Literate.....	37		15	10	7	4	1	
Illiterate.....	4		1	1	1		1	
All other.....	196	7	60	60	49	11	4	5
Literate.....	138	6	46	46	26	9	4	1
Illiterate.....	58	1	14	14	23	2		4

¹ Includes one twin birth.² Includes one twin birth resulting from second confinement in 1916.³ Includes one birth resulting from second confinement in 1916.

TABLE 29.—*Infant mortality and stillbirth rates, by age of mother and order of pregnancy; births from all pregnancies.*

Age of mother and order of pregnancy.	Births, all pregnancies.					
	Total births.	Live births.	Infant deaths.	Infant mortality rate. ¹	Stillbirths.	
					Num-ber.	Per cent. ¹
Total.....	4,714	4,572	637	139.3	142	3.0
Under 20 and 40 and over ²	618	604	99	163.9	14	2.3
20 to 29.....	3,093	3,010	391	129.9	83	2.7
30 to 39.....	865	826	119	144.1	39	4.5
Not reported.....	138	132	28	212.1	6	4.3
First pregnancy.....	1,308	1,265	186	147.0	43	3.3
Under 20 and 40 and over.....	410	400	70	175.0	10	2.4
20 to 29.....	820	794	106	133.5	26	3.2
30 to 39.....	48	43	6	.....	5	.....
Not reported.....	30	28	4	.....	2	.....
Second pregnancy.....	1,072	1,039	129	124.2	33	3.1
Under 20 and 40 and over.....	122	120	20	166.7	2	1.6
20 to 29.....	842	815	97	119.0	27	3.2
30 to 39.....	74	72	7	.....	2	.....
Not reported.....	34	32	5	.....	2	.....
Third pregnancy.....	795	783	104	132.8	12	1.5
Under 20 and 40 and over.....	28	27	1	.....	1	.....
20 to 29.....	646	641	86	134.2	5	.....
30 to 39.....	96	90	9	.....	6	.....
Not reported.....	25	25	8	.....	.....	.....
Fourth pregnancy.....	552	536	81	151.1	16	2.9
Under 20 and 40 and over.....	14	13	2	.....	1	.....
20 to 29.....	404	392	54	137.8	12	3.0
30 to 39.....	118	115	22	191.3	3	2.5
Not reported.....	16	16	3	.....	.....	.....
Fifth pregnancy.....	379	371	53	142.9	8	2.1
Under 20 and 40 and over.....	8	8	1	.....	.....	.....
20 to 29.....	212	209	29	138.8	3	1.4
30 to 39.....	147	143	21	146.9	4	2.7
Not reported.....	12	11	2	.....	1	.....
Sixth and later pregnancies.....	608	578	84	145.3	30	4.9
Under 20 and 40 and over.....	36	36	5	.....	.....	.....
20 to 29.....	169	159	19	119.5	10	5.9
30 to 39.....	382	363	54	148.8	19	5.0
Not reported.....	21	20	6	.....	1	.....

¹ Not shown where base is less than 100.

² Includes 51 births, 49 live births, 7 infant deaths, and 2 stillbirths to mothers 40 and over.

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TABLE 30.—Cause of death, by month of life; deaths among infants born in Gary in 1914.

Deaths among infants born in 1914.									
Cause of death.									
Month of life.	Total.	Gastric and intestinal diseases.				All other causes.			
		Total.	Breast fed.	Partly breast fed.	Artificially fed.	Total.	Breast fed.	Partly breast fed.	Artificially fed.
Total.....	136	106	25	29	11	172	32	27	
First.....	25	10	5		2	15	11	1	
Second.....	16	7	4		2	9	5	3	
Third.....	10	5	4		1	5	2	3	
Fourth.....	13	7	3		2	6	3	2	
Fifth.....	11	5	2		2	6	3		
Sixth.....	10	6	1		2	4	1	2	
Seventh.....	14	5	1		5	6	2	4	
Eighth.....	5	5	1		3	3	1	1	
Ninth.....	7	5	1		3	2	1		
Tenth.....	9	4			4	5	2	3	
Eleventh.....	4	1			1	3	1	1	
Twelfth.....	11	3			8	8	1	7	

¹ Excludes 31 infants who died not fed.

² Includes 1 infant for whom type of feeding was not reported.

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U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

U.S. CHILDREN'S BUREAU
GRACE ABBOTT, Chief

A BRIEF MANUAL OF GAMES FOR ORGANIZED PLAY

ADAPTED FROM STANDARD SOURCES

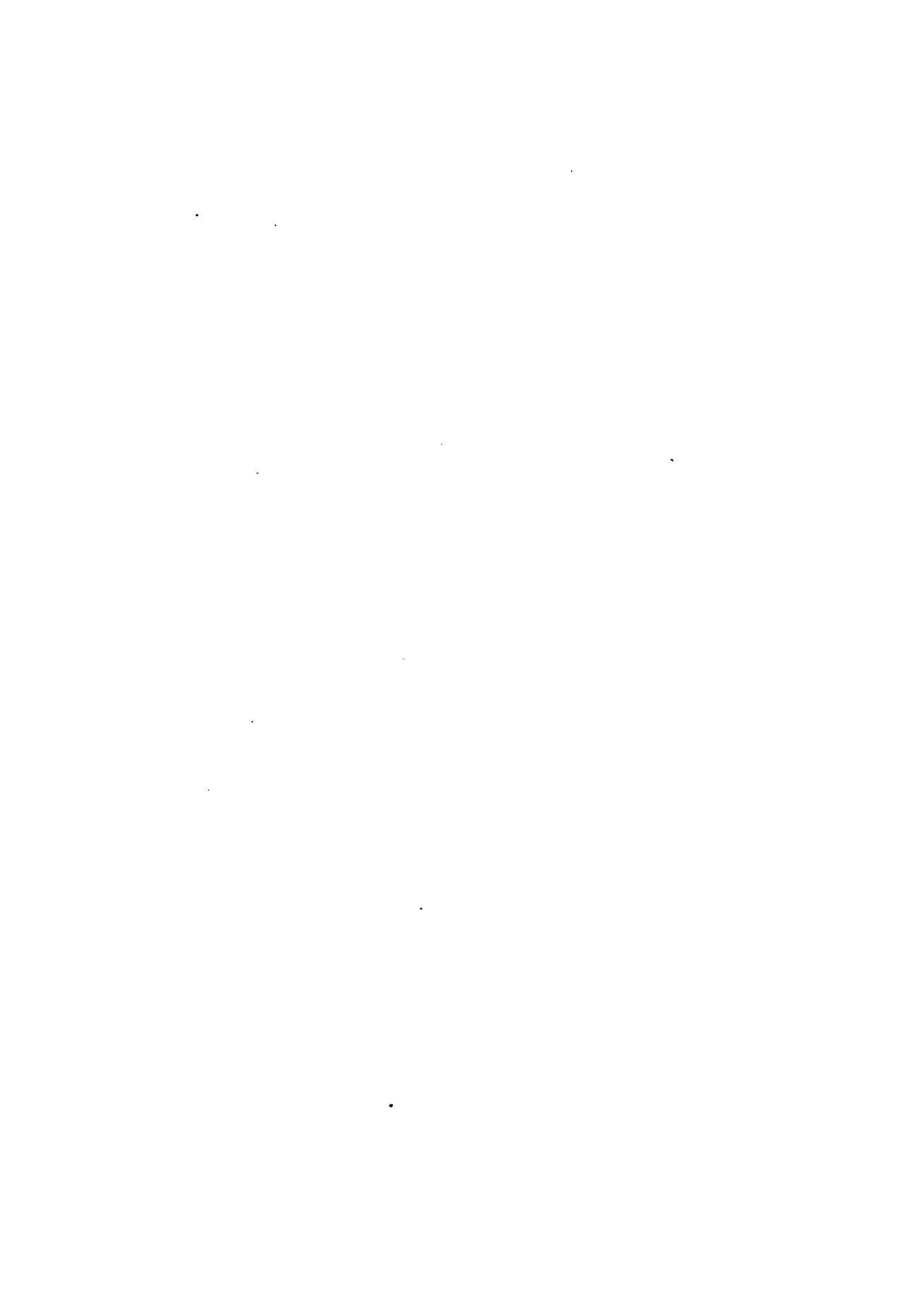
BY

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, October 20, 1922.

SIR: There is transmitted herewith a brief manual of games for organized play adapted from standard sources by Martha Travilla Speakman, of the staff of the Children's Bureau.

This manual was prepared at the request of the Commissioner of Education of Porto Rico, and in conference with the teachers of Porto Rico, while the Children's Year Survey was in progress in the island.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

HON. JAMES J. DAVIS,
Secretary of Labor.

A BRIEF MANUAL OF GAMES FOR ORGANIZED PLAY.

HOW TO TEACH GAMES.

Games, like arithmetic and reading, must be graded. To enjoy a game the child must understand it. Little children find the greatest pleasure in playing simple games, often games of "make-believe and repetition," but always simple games. Older children demand games that are much more complicated and much more individual, while still older boys and girls take the greatest interest in playing team games, where competition is the chief factor.

The teacher can do a great deal by selecting the right games and by seeing that all the children are included in the games.

Try to awaken in every child a sense of alertness by quickening his senses of hearing and seeing. Make every child feel that he is a part of the game, so that he will get the fun out of it as well as the physical exercise.

Choose games that will be so interesting that all your children will want to play, and you will be taking a big step toward making them good citizens.

In teaching new games there are several very important things to remember:

1. Plan your program of games and folk dances so that it will include both active and quiet play. This will keep the children from getting tired and they will enjoy the play period more than if the games were not planned.

2. When explaining a new game, have the children stand in a circle. It is easy to maintain quiet and order this way.

3. Choose clever children to start a new game. Then, after the class understands the game, choose the dull ones and let them take an active part; thus the child who needs to be taught alertness can be taught to be alert by playing such games as "Midnight."

4. Give every child a chance.

5. Make the game easy enough at first, then gradually make it more difficult. Let the children find out the point of the game themselves. It gives them great joy to discover.

6. Make rules and stick to them. Fair play is most important.

7. Don't play confusing games. To do so spoils the child's pleasure.
8. Develop reason and judgment about risks and dares.
9. Encourage the timid pupils to give dares and to take risks.
10. Don't make the games too serious. Get laughter out of them.
11. Team play is most important, especially for older children.
12. Honor. It is far better to lose than to do anything that is dishonorable.
13. Put yourself into the game that you are teaching and the children will catch your spirit.

GAMES FOR YOUNGER CHILDREN.

SCHOOLROOM GAMES.

"I SEE."

1. Teacher begins by saying: "I see something that is red" (or "green," or "blue"). The children in turn guess what it is. The winner then chooses something, etc.

2. Same game but with "I see something made of iron," etc.

3. Same game but with "I see something made of wood," etc.

4. Same game but with "I see something, the first letter of which is 'a'" (for example, "apron") and the children guess in turn what it is. The child who guesses correctly chooses something (in sight) beginning with the letter "b" (for example, "book," or "blotter"). Each time the winner chooses some article beginning with the next letter of the alphabet.

NOTE.—This game (1) trains little children to notice colors; (2 and 3) trains them to distinguish materials; and (4) helps them to make a game of words in either English or Spanish.

"WHO IS KNOCKING AT MY DOOR?"

Children sit quietly. One child is chosen to sit on a chair in front of the room and shut his eyes tightly.

Some other child (chosen by teacher) goes up and knocks on the floor behind him.

Child with closed eyes says, "Who is knocking at my door?" Child knocking says, "It is I." Child with closed eyes guesses who it is. He has three guesses. If he can not guess, he looks, and then another child is chosen to knock. If he guesses correctly then the "knocker" becomes "it" and the teacher chooses another "knocker."

NOTE.—This game teaches children to listen carefully and to distinguish sounds.

CAT AND MICE.

One player is chosen to be "cat" and hides behind or under the teacher's desk. After the "cat" is hidden the teacher beckons to two or three other players, who creep quietly up to the desk and scratch on it with their fingers to represent the nibbling of mice. As soon as the teacher says "Catch them," the "cat" scrambles out from under the desk and chases the "mice," who may save themselves only

by getting back to their holes (seats). If a "mouse" be caught, the "cat" changes places with him for the next round of the game. If no "mouse" be caught, the same "cat" may continue, or the teacher may choose another.

A different set of "mice" should be chosen each time, so as to give all the children an opportunity to join in the game.

NOTE.—A good game to waken up a sleepy schoolroom and to make the children alert.

MAGIC MUSIC.

One player is sent from the room; while he is absent one of those remaining hides a thimble, a cork, or some other small object which has been previously shown to the absent one. When the object is hidden, the absent player is recalled and proceeds to hunt for the hidden object. While he is doing this the others sing or clap their hands, the sound being very soft and low when the hunter is far away from the object, growing louder as he approaches it. Piano music is desirable, but for schoolroom use singing is found to be more interesting for all. For very little children handclapping is pleasing and sometimes more easily used than singing.

NOTE.—This game helps to make the children alert.

BUTTON, BUTTON.

Children sit with the palms of their hands pressed together. One child (A) has a button pressed between the palms of his hands. He walks down the aisle, passing his pressed palms between the hands of each child. He lets the button slip from his own hands into the hands of some child (B). When he has gone to the end of the line he chooses a child (C) to guess in whose hands the button is. If C guesses correctly, he gets up and passes as before; but if C does not guess correctly, the one whom he has guessed (D) opens his hands to show he has not the button, and then D guesses, and so on, until the button is found. Then the game is repeated.

NOTE.—A good game to play, as well as a quieting game. It teaches children concentration.

APPLES RED.

Take several different-colored balls or several small objects, such as a blackboard eraser, a piece of chalk, a pencil; let one child pass these around, giving each article to a different child. The children hide whatever they are given, then the child who has given out the things goes around and asks each child for the exact article he gave him.

NOTE.—A very good quieting game. Good memory test. Develops self-control.

"WHO HAS GONE FROM THE RING?"

Children stand in a circle, or sit in their seats in the schoolroom. One child is "it." He closes his eyes. The teacher then motions for another child to leave the room. The first child, "it," opens his eyes and tries to name the child who has gone from the ring. If he fails, he closes his eyes again and the child outside returns to his place in the room and "it" opens his eyes and guesses who has returned. The second child, if named correctly, is then "it" and the game is repeated.

NOTE.—Develops memory and observation. Especially good to quiet a group after a running game.

FOX AND SQUIRREL.

The players sit in their seats facing toward the aisles, so that each two adjacent lines have their feet in the same aisle and face each other. The game consists in passing or tossing some article, such as a bean bag, basket ball, or handball—the "squirrel"—from one player across the aisle to another and back again, zigzagging down each aisle to be followed at once by a second article, the "fox"; the object being to have the "fox" overtake the "squirrel" before the end of the line is reached. The line that finishes first wins.

With very little children, passing is better than tossing; but with older children, or even with little ones when more experienced, it is well to use the game as a practice for tossing and catching. The action should be very rapid. The game makes much sport for young children, and they are fond of it.

NOTE.—Develops alertness, skill, and concentration.

SQUIRREL AND NUT.

All the players but one sit at their desks with heads bowed on the arms as though sleeping, but each with a hand outstretched. The odd player, who is the "squirrel," carrying a nut, runs on tiptoe up and down through the aisles, and at his discretion drops the nut into one of the waiting hands. The player who gets the nut at once jumps up from his seat and chases the "squirrel," who is safe only when he reaches his "nest" (seat). Should the "squirrel" be caught before he reaches his nest, he must be "squirrel" the second time. Otherwise the player who receives the nut becomes the next "squirrel."

It is scarcely necessary to say that the other players "wake up" to watch the chase.

NOTE.—Develops self-control as well as alertness.

SLAP JACK.

The players stand in a circle, clasping hands. One player runs around the outside of the circle and tags another as he runs. The player tagged immediately leaves his place and runs in the opposite direction. The object of both runners is to get back first to the vacant place. Whoever succeeds, wins, and remains in that place, the one left out becoming runner the next time.

This is sometimes varied by having the players bow and shake hands as they meet. This adds an element of self-control, but detracts from the vigor and sport of the game. This game is one of the standard favorites for little children.

In the schoolroom the game is played with all of the pupils seated except one. The odd player walks or runs through the aisles, touches some player, and runs on around the room in the direction he is going. The one touched at once leaves his seat and runs around the room in the opposite direction. The one wins who first gets back to the vacant seat. Dodging through aisles to shorten distance is not allowed; the run must be around the outer aisles of the room.

NOTE.—Can be played on playground as well as in schoolroom. Develops alertness and self-control.

“ I SAY, STOOP!”

The players stand in a circle, and in front of them stands the leader or teacher. The leader says quickly, “ I say, stoop!” and immediately stoops and rises again. The players all imitate the action; but when the leader says “ I say, stand!” at the same time stooping, the players should remain standing. Any who make a mistake and stoop when the leader says “ I say, stand!” are out of the game.

NOTE.—This can be played on the playground as well as in the schoolroom. It develops alertness, self-control, and concentration.

PLAYGROUND GAMES.**JACOB AND RACHEL.**

(12 or more players.)

All of the players but two form a circle, with clasped hands. The two odd players are placed in the center, one of them, “ Jacob,” being blindfolded. The object of the game is for “ Jacob” to catch the other player, “ Rachel.” “ Rachel” does all she can to avoid being caught by “ Jacob.”

“ Jacob” begins the game by asking, “ Rachel, where are you!” “ Rachel” replies, “ Here I am, Jacob,” and immediately tiptoes to

some other point in the ring, trying to avoid being caught, or she may dash from one side of the ring to the other, or resort to any tactics except leaving the ring. "Jacob" may repeat his question whenever he wishes, and "Rachel" must answer each time.

When "Rachel" is caught "Jacob" returns to the ring, and "Rachel" is blindfolded and chooses a new "Jacob," this time taking the aggressive part and seeking him with the question, "Where are you, Jacob?"

NOTE.—This game develops alertness.

PUSS IN THE CORNER.

(5 or more players.)

Each player but one has a goal. It may be a chair, desk, corner, or other object. The one who has no goal goes up to another player and says, "Pussy wants a corner." The answer is, "Ask thy next-door neighbor." During this time the others change goals, and the odd player tries to get one. If he has tried several times without success he may go to the center of the space and call, "All change," and all must change goals, giving him a better chance. The one left out is "it," and the game begins as before.

NOTE.—This is a good game for little children. It develops daring and makes them alert.

BLACK AND WHITE.

(11 or more players.)

This game is played with a 3-inch cube of wood which has been painted white on three of its surfaces and black on the other three surfaces. The players are divided into two equal groups. One group is called the "Blacks," the other the "Whites." Two goals are chosen, one for the "Blacks" and one for the "Whites," equally distant from a center dividing line. A leader, who may be an extra player or the teacher, stands on the center line. The "Blacks" stand on a line parallel to the center line, 5 feet to the right of the leader, and the "Whites" on a similar line, 5 feet to the left of the leader. The leader tosses the cube up and when it falls to the ground, if a white surface is up, the "Whites" must run for their goal, the "Blacks" chasing them to tag as many as possible before they reach their goal. If the cube falls with a black surface up, the "Blacks" must run for their goal, the "Whites" chasing them. The players who are tagged must go over to their opponents' team and thereafter assist them in catching players on the other team. The game ends when all the "Blacks" have been caught by the "Whites," or vice versa.

NOTE.—This game develops alertness and concentration.

CAT AND RAT.

(10 to 30 or more players.)

The players join hands and form a circle. One is chosen "rat" and stands inside the circle. Another is the "cat" and takes her place outside the circle. The "cat" tries to catch the "rat." The players favor the "rat" and allow him to run in and out of the circle, but try to prevent the "cat" from following him by raising and lowering their arms, but they must not bend their knees. When the "rat" is caught the "cat" and "rat" join the circle and the players at the right of each become "rat" and "cat." When there are many players two "cats" may be chosen.

NOTE.—This is a good game to play with small children who are not accustomed to games. It develops alertness.

"HAVE YOU SEEN MY SHEEP?"

(12 or more players.)

Players form in a circle. One player is chosen as "shepherd." He goes around the outside, taps a player on the back, and asks, "Have you seen my sheep?" The player asks, "How is he dressed?" The "shepherd" then tells something of the dress of one of the players in the circle, as "He wears a blue coat and low shoes." The player tries to guess who is being described. When he guesses correctly the "shepherd" says "Yes," and the guesser chases the one described. Both must run on the outside of the circle. If the chaser catches the runner before the runner has returned to his place, the chaser becomes "shepherd"; if he does not, the runner becomes "shepherd." Notice that the "shepherd" does not run.

NOTE.—A good game to wake up the group.

CHARLEY OVER THE WATER.

One player is chosen to be "Charley," and if there are more than 20 players there should be two or more "Charleys," to make the action more rapid. "Charley" stands in the center; the other players join hands in a circle around him and dance around, repeating the rhyme:

"Charley over the water,
Charley over the sea,
Charley catch a blackbird,
Can't catch me."

As the last word is said the players stoop, and "Charley" tries to tag them before they can get into that position. Should he succeed, the player tagged changes places with him.

NOTE.—This game develops alertness.

WATER SPRITE.

The players stand in two lines facing each other, with a large open space representing a "river" between. One player, representing the "water sprite," stands in the middle of the "river" and beckons to one on the bank to cross. This one signals to a third player on the opposite bank or side of the "river." The two from the banks then run across to exchange places, the "water sprite" trying to tag one of them. If the "water sprite" be successful, he changes places with the one tagged.

NOTE.—This is a more complicated game for little children. Best to play it after they have played several of the other playground games. A good running game.

SQUIRREL IN TREES.

This game is very like "Hound and Rabbit," but is a little less exciting and under some circumstances better adapted to very young children.

Most of the players stand in groups of three with hands on each other's shoulders, forming "hollow trees." In each "tree" is a player representing a "squirrel," and there is also one odd "squirrel" without a "tree." The teacher or leader claps her hands, when all the "squirrels" must run for other "trees," and the odd "squirrel" tries to secure a "tree," the one who is left out being the odd "squirrel" next time.

NOTE.—This game is an introduction to several more difficult ones that will come later, such as "Hound and Rabbit." It teaches the children to play in small groups instead of in a big circle.

HINDU TAG.

A player is safe from being tagged only when his or her forehead is touching the floor.

NOTE.—A splendid exercise for the whole body. The teacher can show the children how this game is played, but it is not at all necessary to play with the children unless the teacher so desires.

BLIND MAN'S BUFF.

One player is chosen to be blindfolded, and stands in the center. The other players join hands and circle around him until the "blind man" claps his hands three times, whereupon the circle stops moving



and the "blind man" points toward some player in the circle. The player at whom he points must at once step into the circle, and the "blind man" tries to catch him, and when caught must guess who the player is. If the guess be correct, they change places. If not correct, or if the "blind man" has pointed at an empty space instead of at a player, the circle continues and the game is repeated. The player who is called into the circle will naturally try, by noiseless stepping, dodging, etc., to give the "blind man" some difficulty in catching him, but when once caught must submit without struggle to examination for identification.

This is one of the oldest recorded games, and is found in practically all countries. The ancient Greeks called it "Brazen Fly."

NOTE.—This game is an introduction to many more difficult ones later on. It develops alertness and memory. Great care should be used in changing the blindfold, that each time a clean side of the handkerchief be used, otherwise serious diseases may be passed from child to child.

DROP THE HANDKERCHIEF.

All the players, except one who is "it," stand in a circle. "It" runs around on the outside of the circle, carrying a handkerchief, which he quietly drops behind one of the players in the circle. As soon as this player in the circle discovers that the handkerchief has been dropped behind him, he must pick it up and run around the circle in the same direction as the player who dropped it, trying to catch him before he reaches the place left vacant in the circle. If "it" is caught he must be "it" over again; if not, the other player becomes "it," and the game is repeated.

GAMES FOR OLDER CHILDREN.

SCHOOLROOM GAMES.

"I SPY."

One child leaves the room, and the teacher, or another child, hides an object—eraser, ball, knife, etc.—previously agreed on, in plain sight but in an unusual place. The child then returns to the room and tries to find the object.

Instead of one child, several may be sent out. As soon as one of them finds the hidden article he takes his seat. When three of the children have taken their seats a new group is sent out, and the article, or a new article, is hidden again.

The game may be varied by hiding the object out of sight. The children who are in the secret help the searcher by saying "Hot" when the searcher is near the object, and "Cold" when he is not near it. Also the children may clap their hands as the searcher approaches the object.

NOTE.—This game develops the power of observation and teaches the children who are in the secret to control their desire to tell.

INDIAN RUNNING.

(Quiet game.)

Four or five children go out of the room and run in again in "Indian" (single) file. They run around the room once and then go out again and return in a group to their seats. The teacher then chooses one child to replace the "Indian runners" in their original order or to name the order in which they ran.

This can also be played by arranging a group of children in a certain position. After a minute they return to their seats and another child is chosen to tell how they were arranged.

NOTE.—This game teaches the child to observe.

GOING TO JERUSALEM.

The game starts with all of the players ready to march. The music begins and the class marches in serpentine form, up one aisle and down the next. For a large class there should be from one to six fewer seats than the number of players. For instance, one seat should be counted out in each row or each alternate row. The seat that is not in play may be turned up, if of that variety, or a book may

be placed on the desk belonging to it. The music stops suddenly and every child tries to get a seat.

The game may be played without music. The leader or teacher beats time and stops when players are to sit; or he may give a signal or a command to "sit."

NOTE.—This game develops alertness.

DUMB CRAMBO.

The class is divided into two groups. One group goes out of the room and those who remain choose some verb. The outside group is then told some word that rhymes with the chosen verb. They consult together (outside the room), and decide on a verb which they think is the chosen verb and then return to the schoolroom and, without speaking, act the word. If it is right, the class claps hands, but if wrong they merely shake their heads "no." The acting group goes out of the room again and decides upon another verb that rhymes with the word. They continue to act verbs until they have guessed the right one.

For example: The verb "eat" is chosen. The group outside is told that the word rhymes with "heat." Then the group decides that perhaps the verb is "beat," and they act "to beat." As this is not correct, they try "to meet," but again without success. At last they try "to eat." When the word is guessed the groups change places and the game is played again.

NOTE.—This is an excellent game to help in the teaching of English, especially in illustrating verbs of motion.

CHARADES.

The class is divided as in Dumb Crambo. The group which is outside chooses a word of several syllables and then they go back into the room and act out each syllable separately and then the whole word. They can talk or do anything they wish in dramatizing the word.

For example:

Kingdom----- King-dumb.

Infancy ----- In-fan-see.

NOTE.—This is an excellent game to help in the teaching of English.

PRINCE OF PARIS.

A player is chosen as leader; the others are numbered consecutively from one up, and all are seated.

The leader, standing in front, says, "The Prince of Paris has lost his hat. Did you find it, No. 4, sir?" Whereupon No. 4 jumps to his feet and says:

"What, sir! I, sir?"

Leader. "Yes, sir. You, sir."

No. 4. "Not I, sir."

Leader. "Who then, sir?"

No. 4. "No. 7, sir."

No. 7, as soon as his number is called, must jump at once to his feet and say (before the leader has time to repeat, "The Prince of Paris has lost his hat"):

"What, sir! I, sir?"

Leader. "Yes, sir. You, sir."

No. 7. "Not I, sir."

Leader. "Who then, sir?"

No. 7. "No. 3, sir."

No. 3 immediately jumps to his feet, and the same dialogue is repeated. The object of the game is for the leader to try to repeat the statement, "The Prince of Paris has lost his hat," before the player named can jump to his feet and say, "What, sir! I, sir?" If he succeeds in doing this, he changes places with the player who failed in promptness, that player becoming leader.

Should any player fail to say "sir" in the proper place, this also is a mistake, and the leader may change places with such player.

NOTE.—This game may be played in Spanish or English. The object is to develop alertness and memory.

TAG-THE-WALL RELAY.

(Racing game.)

The players should all be seated, an even number in each row of seats. At a signal the last player in each line runs forward and tags the front wall. As soon as this player is out of the aisle, the others all move backward one seat. This leaves the front seat vacant, and the runner, having touched the wall, returns immediately and takes this vacant front seat. As the player sits down he raises his hand, which is a signal for the player who is now the last one in the line to run forward, the line moving backward one place as soon as he is out of the aisle. He in turn, having touched the wall, takes the vacant front seat. The play is continued in this way until everyone in the row has run.

The line wins whose player, sitting originally in the front seat, first returns to his seat.

As in all schoolroom games where there is running, the seated players should be very careful to keep their feet under the desks, so there will be nothing in the aisles over which the runners may trip.

NOTE.—This game develops both alertness and concentration.

FIRE, AIR, WATER.

This game may be played with all the players in their regular seats except one, who is "it." The one who is "it" stands at the front of the room and throws a small ball or a knotted handkerchief at some player and at the same time calls either "Air," "Fire," or "Water," and then quickly counts, "1, 2, 3, 4, 5, 6, 7, 8, 9, 10," out loud, while the player at whom the handkerchief is thrown must quickly name some animal living in the air if "it" calls "Air," or name some fish if "it" calls "Water." If "Fire" is called, the player at whom the handkerchief is thrown must remain silent. No child may name any animal or fish previously called by another child. Should the player who is hit by the ball fail to answer correctly before the one who is "It" counts 10, he changes places with the thrower.

NOTE.—The chief points are alertness and ability to think quickly.

GAMES FOR OLDER CHILDREN.

PLAYGROUND GAMES.

MIDNIGHT.

(Twelve o'clock at night.)

One player is the "fox" and the others are "sheep." The fox may catch the "sheep" only at "midnight." The game starts with the "fox" standing in a "den" marked in one corner of the playground (or schoolroom) and the "sheep" in a "sheepfold," marked in the corner diagonally opposite. The "fox" leaves his den and wanders about the meadow (playground), whereupon all the "sheep" also come out and scatter around, approaching the "fox" as close as they dare. They keep asking him, "What time is it?" and he answers with any hour he chooses. Should he say, "Three o'clock," or "Eleven o'clock," they are safe; but if he should say "Midnight" they must run for the "sheepfold" as fast as possible, the "fox"



chasing them. Any "sheep" caught changes places with the "fox," and the game is repeated. When played in a schoolroom, only a few children should be selected for "sheep."

NOTE.—This is a good group game, and develops alertness. It is an excellent game to teach the children to take risks and to dare.

RABBIT IN A HOLLOW TREE.

The players stand in groups of three with their hands on each other's shoulders, each group making a small circle which represents a hollow tree. In each "tree" is a player who takes the part of "rabbit." There should be one more "rabbit" than the number of "trees." One player is also chosen for "dog." The "dog" chases the odd "rabbit," who may take refuge in any "tree," always running in and out under the arms of the players forming the

“tree.” The “rabbit” already there must run for another “tree.” Whenever the “dog” catches a “rabbit” they change places, the “dog” becoming the “rabbit” and the “rabbit” the “dog.” If at any time a “tree” is empty, the “dog” may become a “rabbit” by finding shelter in this empty “tree,” whereupon the odd “rabbit” must take the part of the “dog.”

NOTE.—This is a more advanced way of playing Squirrel in Tree and is a very good game to develop alertness.

POM POM PULLAWAY.

(5 to 30 or more players.)

This game is often played between the curbing of a city street but is suitable for any open space which is large enough to permit two lines to be drawn across with a space of from 30 to 50 feet between them. All players stand on one side behind one of the dividing lines, except one player who is “It” and who stands in the center of the open ground. He calls:

“Pom Pom Pullaway!

If you don’t come, I’ll pull you away!”

whereupon all the players must run across the open space to the safety line on the opposite side, the one who is “It” trying to tag as many as possible before they reach that line. Anyone tagged by the one who is “It” joins him in helping to catch other players as they dash across the open space; but the one originally “It” remains the caller throughout the game. The player who is “It” again calls “Pom Pom Pullaway,” etc., and all the uncaught players must run for their original goal. The players run from one goal to the other in this way until all have been caught. Then the game starts all over again. The first one to be caught in one game becomes “It” for the next game.

NOTE.—A splendid game, especially for boys.

THREE DEEP.

(15 to 60 players.)

All the players but two form in a double circle facing inward, one player directly behind another. There are several methods of forming players into this double circle. One method is to have the players march in column two by two, form in a circle, and all face inward. Another method is to have the players form in a circle in single file, then every second player step in front of his neighbor on the right.

The two odd players, of whom one is runner and the other chaser, start outside of the circle, generally one of them starting on one side of the circle and the other opposite. The object of the game is for the chaser to tag the runner. The runner may save himself by running into the circle and stopping in front of any couple, whereupon, that file having been made "three deep," the outer player or third man can be tagged, so he becomes runner and tries to evade the chaser. He may save himself in the same way by stopping in front of a couple.

Should the chaser tag the runner, they exchange places, the runner becoming chaser and the chaser becoming the runner.

Both runner and chaser may dash through the circle, but may not pause for a moment within the circle, except when the runner stops in front of some couple.

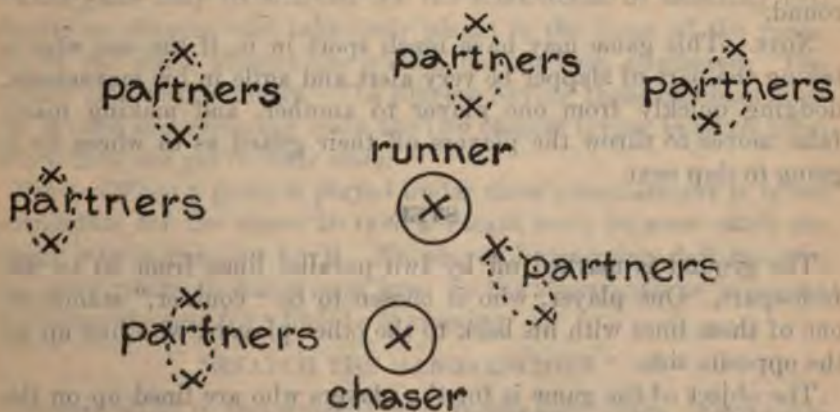
When players confuse the play by hesitating while running through the circle, this privilege of running through is sometimes forbidden, all the chasing being confined to the outside of the circle.

NOTE.—This is a good chasing game.



THIRD MAN.

This game is another form of Three Deep, but instead of the circular formation the players are scattered irregularly over the play-



ground. All of the players but two take partners and scatter in any irregular way. The players forming each couple stand facing each other, with the distance of a long step between them. To make a

success of the game the distance between the various couples should be considerable.

Of the two odd players, one is runner and the other chaser, the object of the latter being to tag the runner. The runner may take refuge between any two players who are standing as a couple. The moment that he does so, the one toward whom his back is turned becomes "third man" and must in turn try to escape being tagged by the chaser. Should the chaser tag the runner, they exchange places, the runner immediately becoming chaser and the chaser becoming runner.

NOTE.—This game keeps all the players on the alert.

THIRD SLAP.

The players should be divided into groups of from 5 to 10 each. One in each group is chosen to be "it"; the others line up in front of him, all standing at a distance of from 30 to 50 feet from a goal previously decided on. The players in the line hold their hands extended forward the length of the forearm, the elbows being bent and touching the sides; the palms should be turned downward.

The one who is "it" tries to slap the hands of any of the players, who may evade him by bending the hands downward, upward, or sideways at the wrist, but may not withdraw the arm or change the position of the elbow. Any player who receives three slaps, whether on one or both hands, immediately upon receiving the third slap, chases the one who is "it" toward the goal. Should the slapper be caught before he reaches the goal, he must continue as before, but if he succeeds in reaching the goal in safety, he changes places with his pursuer, who becomes "it" or slapper for the next round.

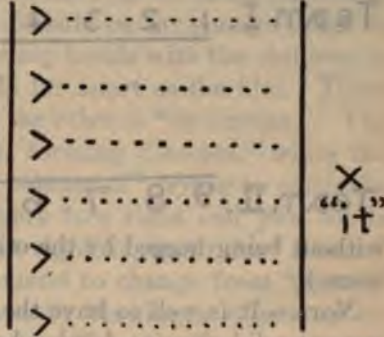
NOTE.—This game may have much sport in it, if the one who is taking the part of slapper be very alert and agile in his movements, dodging quickly from one player to another, and making many false moves to throw the players off their guard as to where he is going to slap next.

STEP.

The ground is marked off by two parallel lines from 50 to 200 feet apart. One player, who is chosen to be "counter," stands on one of these lines with his back to the other players, who line up on the opposite side.

The object of the game is for the players who are lined up on the rear line to advance until they cross the line where the counter is stationed. They may advance only by short stages, however, during which the player in front counts 10.

The game starts by this forward player counting 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, loudly and rapidly, the other players moving forward while he does this; but as soon as he says "10" they must stand still, and he at once turns to look at them. He will call the name of any player or players whom he sees moving, and any so called must go back to the starting line and begin over again. This counting of 10 by the one player and moving forward of the others continues until all have crossed the line where the counter stands. The first one over changes places with him for the next game.



NOTE.—The players will learn to use much caution in moving forward, often stopping before the count of 10, to be sure that they shall not be caught in motion. The progress thus made may seem slower than that of those who dash forward to the last moment, but, as with the proverbial hare and tortoise, this slower but continuous method often wins.

NUMBERS CHANGE.

(10 or more players.)

The players stand in a large circle and are numbered consecutively. One player take his place in the center. He calls two numbers, and the players whose numbers are called must change places while the center player tries to secure one of their places. The one who is left without a place becomes the center player.

This game may be adapted for the schoolroom by selecting two players as chasers, who take their places in the front of the room. All of the other players are seated, having been numbered. The teacher calls two numbers. The players having those numbers must rise at once and exchange seats, the two chasers trying to catch them before they can get to their seats.

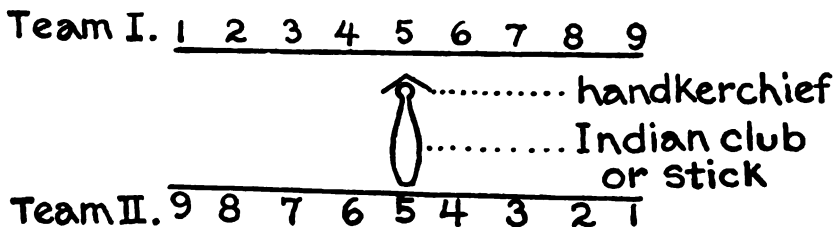
NOTE.—When a game is played under these circumstances it is not permissible for the chaser to take a vacant seat; he must catch the player who is running for it. No player, having once left his own seat, may return to it but must keep up the chase until he is caught or reaches the seat for which he is running.

"SNATCH THE HANDKERCHIEF."

Players stand in two straight lines facing each other. Each child has a number.

One team begins to number from one end of the line, and the other team begins at the other end.

The teacher calls a number, for example, "No. 7"; then each of the two "No. 7" players tries to snatch the handkerchief from the Indian club (without upsetting it) and get back to his own place



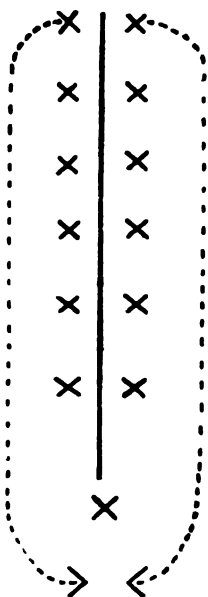
without being tagged by the other "No. 7." (The teacher keeps the score.)

NOTE.—It is well to have the boys and girls on opposite sides. It is a splendid game to develop both skill and alertness.

LAST COUPLE OUT.

(11 to 25 players.)

An odd number of players is required for this game. One is chosen for catcher, who stands with his back to the other players. The other players stand in couples in a long line behind, facing in the same direction that he does. The catcher should be not less than 10 feet in front of the first couple.



The catcher calls, "Last couple out." Then the last pair in the line run toward the front (the right-hand one on the right side of the double line, and the left-hand one on the left side) and try to join hands in front of the catcher before he tags either of them. The catcher must not chase them before they are in line with him, and must not turn his head to see when or whence the runners are coming. The runners should vary the method of approach, sometimes both circling far out beyond on each side, or one of them doing this and the other running close to the lines.

If the catcher succeeds in catching one of the players before that player can clasp hands with his partner, the player tagged becomes the catcher and the former catcher and the other player form a couple and take their places at the head of the line, which should move backward to make room for them. If neither is caught, they take their places at the head of the line, and the catcher calls again for the "last couple out."

NOTE.—This is a very good game to develop self-control.

STREET AND ALLEY.

(18 or more players.)

The players stand in rank and file, with four or more players in each rank and in each file. The files should be far enough apart so that the children in one file can just clasp hands with the children in the next file. The ranks should be as far apart as the files. There are two extra players, one a "thief" the other a "policeman." The players join hands across the ranks, forming "streets," while the "thief" and "policeman" run, the "policeman" trying to catch the "thief." At a given signal, all players face right and join hands along the file, forming passageways at right angles to the "streets." These are called "alleys." The command to change from "street" to "alley," or vice versa, may be given by blowing a whistle or by calling "street" and "alley" alternately. To make the game lively, the command to change from "street" to "alley" should be given often. The "thief" and "policeman" may run only where the passageways are open. They are not permitted to break through the joined hands or duck under them. When the "policeman" catches the "thief," two players from the ranks are chosen to take their places and the former "thief" and "policeman" step into the places left vacant in the ranks.

NOTE.—This is a splendid exercise. Develops alertness.

TAG GAMES.

In Tag, one player is "chaser," or "it," and tries to touch or "tag" the other players, the one tagged then becoming chaser. There are many kinds of "tag" games, and it adds to the interest and fun to vary them.

Japanese tag.

In this form of the game, whenever a player is touched or tagged he must place his left hand on the spot touched, whether it be his back, knee, elbow, ankle, or any other part of the body, and in that position must chase the other players. He is relieved of this position only when he succeeds in tagging some one else.

As in other tag games, where there are a large number of players several players take the part of the tagger, or "it," at the same time.

NOTE.—By keeping the left hand on the spot tagged the player develops skill and the game is more amusing.

Stiff-knee tag.

All players keep stiff knees and play tag. (For older children.)

NOTE.—This is a good game, and also a good leg-muscle exercise.

Nose-and-toes tag.

Players are safe from being tagged when the nose is held with one hand and (at the same time) toes of foot with the other hand. (This game is very amusing, especially to "break in" a group.)

NOTE.—This is a good back exercise.

Cross tag.

"It" starts after any player he chooses, but must change his course to pursue any other player who runs between "It" and the one he is chasing. Thus a fresh runner may at any time divert "It" from a tired player who is nearly tagged.

NOTE.—This game is very good for developing skill and alertness.

Chain tag.

One player is chosen to be the first link of the chain. When he has tagged a player, this player locks arms with him and forms the second link. These two links, without separating, add a third link by tagging another player who locks arms with the first player caught. In like manner other links are added, the chain lengthening until it includes all the players as links.

Partner tag.

All the players but two hook arms in couples. Of the two who are free, one is "It" or chaser, and the other the runner. The runner may save himself by locking arms with either member of any couple he chooses. Whenever he does so, the third party of that group becomes runner and must save himself in like manner. If the runner be tagged at any time he becomes "It" or chaser; and the chaser becomes runner.

NOTE.—To get the proper sport into this game, the couples should run and twist and resort to any reasonable maneuver to elude the runner, who is likely at any time to lock arms with one of them and so make the other the runner.

BULL IN THE RING.

(For boys.)

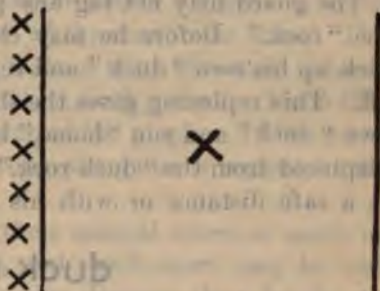
All but one of the players stand in a circle with hands firmly clasped. The odd player stands in the center and is the "bull." The "bull" tries to break through the ring by parting the hands of any of the players. If he breaks through, the two players whose hands he parted immediately give chase to him, and the one catching him becomes the "bull."

NOTE.—This game is better for boys, as it may be rough.

BLACK TOM.

Two parallel lines are drawn on the ground with a space of from 30 to 50 feet between them. All the players except one stand beyond one of these lines. In the middle territory between the lines the one player who is chosen to be "it" takes his place and cries, "Black Tom! Black Tom! Black Tom!" repeating the words three times as here given; whereupon the other players must all rush across to the opposite line, being chased by the center player, who tags any that he can. Any one so tagged joins him thereafter in chasing the others.

The particular characteristic lies in the fact that the center player, instead of saying "Black Tom," may trick or tantalize the runners by saying, "Yellow Tom," or "Blue Tom," or anything else that he chooses. Any player who starts to run upon such a false alarm is considered captive and must join the players in the center. This is also true for any player who starts before the third repetition of "Black Tom."



Another way of giving a false alarm is for any of the center players except the original "it" to give the signal for running. Any runner starting in response to such a signal from any of the chasers, except the original "it," thereby becomes captive and must join the players in the center. The first one to be caught is center player, or "it," for the next game.

NOTE.—A game of alertness and concentration. If the teacher wishes to change the name, using a Spanish name instead of "Black Tom," she can do so.

DUCK ON ROCK.

Equipment: Bean bag, or stone.

Each player is provided with a bean bag or a stone, called a "duck," about the size of a baseball. A large rock or post is chosen as the "duck rock," and 25 feet from it a throwing line is drawn. One player places his "duck" on this "duck rock" and stands by it as a guard. (This guard is selected at the beginning by all the players throwing their "ducks" at the "duck rock" from the throwing line. The one whose "duck" falls nearest to the rock becomes the first guard.) The other players stand behind the throwing line and take turns in throwing at the "duck" on the rock, trying to knock it from the rock. After each throw a player must recover his own "duck" and run back "home" beyond the throwing line.

Should he be tagged by the guard while trying to do this, he must change places with the guard. The guard may tag him at any time when he is in front of the throwing line, unless he stands with his foot on his own "duck" where it first fell. He may stand in this way as long as necessary, awaiting an opportunity to run "home"; but the moment he lifts his "duck" from the ground, or takes his foot from it, he may be tagged by the guard. Having once lifted his "duck" to run "home" with it, a player must not again place it on the ground.

The guard may not tag any player unless his own "duck" be on the "rock." Before he may chase the thrower, he must therefore pick up his own "duck" and replace it should it have been knocked off. This replacing gives the thrower an opportunity to recover his own "duck" and run "home," but should the "duck" not have been displaced from the "duck rock," the thrower may have to wait either at a safe distance or with his foot on his own "duck" if he can

duck rock ●

duck guard X

throwing line x x x x x x

get to it, until some other thrower has knocked the "duck" off the rock. Several players may thus be waiting at one time to recover their "ducks," some of them near the "duck rock," each with a foot on his "duck," others at a distance. Any player tagged by the guard must change places with him, placing his own "duck" on the rock. The guard must quickly recover his "duck" and run for the throwing line after tagging a player, as he in turn may be tagged as soon as the new guard has placed his "duck" on the rock.

A stone that falls very near the "duck rock" without displacing the "duck" may also prove disastrous to the thrower. Should a stone fall within a hand span (stretching from finger tip to thumb) of the "duck rock" without knocking off the "duck," the guard challenges the thrower by shouting "Span!" and proceeds to measure with his hands the distance between the "duck rock" and the other player's "duck." Should the distance be less than a hand's span, the thrower of the stone has to change places with him, put his own "duck" on the rock, and become the guard.

NOTE.—This also is a game for boys. It teaches them to become expert throwers. Great care should be used that the boys do not throw stones at each other.

ANIMAL BLIND MAN'S BUFF.

(10 or more players.)

One player is blindfolded and stands in the center of a circle, with a stick or cane in his hand. The other players dance around him in a circle until he taps on the floor with his cane, when they must stand still. The "blind man" thereupon points his cane at some player, who must take the opposite end of the cane in his hand. The "blind man" then commands him to make a noise like some animal, such as a cat, dog, cow, sheep, lion, donkey, duck, parrot. From this the "blind man" tries to guess the name of the player. If the guess is correct, they change places. If wrong, the game is repeated with the same "blind man."

The players should try to disguise their natural voices as much as possible when imitating the animals, and much sport may be had through the imitation. Players may also disguise their height, to deceive the "blind man," by bending their knees to seem shorter or rising on their toes to seem taller. Where there are 30 or more players, two "blind men" should be placed in the center.

NOTE.—In playing this game, it is very important that the blindfold be refolded on a clean side of the handkerchief, otherwise contagious diseases may be passed from child to child.

STILL POND.

One player is blindfolded; the others scatter about the playground. The blindfolded player is led to the center of the playground, and asked: "How many horses has your father in his stable?"

He replies: "Three."

"What color are they?"

"Black, white, and gray."

"Turn around three times and catch whom you may."

The blindfolded player is then spun around so as to confuse his sense of direction. He then says, "Still pond; no more moving," whereupon the other players must stand still, being allowed only three steps thereafter. The blindfolded player begins to grope for the others. When he catches one, he must guess by touching the hair, dress, etc., whom he has caught. If he guesses correctly, the player changes places with him; if incorrectly, he must go on with his search. The players may resort to any reasonable devices for escaping the hands of the groping "blind man," such as stooping or dodging, so long as they do not take more than three steps. When caught, a player may try to disguise his identity by making himself shorter, etc.

“tree.” The “rabbit” already there must run for another “tree.” Whenever the “dog” catches a “rabbit” they change places, the “dog” becoming the “rabbit” and the “rabbit” the “dog.” If at any time a “tree” is empty, the “dog” may become a “rabbit” by finding shelter in this empty “tree,” whereupon the odd “rabbit” must take the part of the “dog.”

NOTE.—This is a more advanced way of playing Squirrel in Tree and is a very good game to develop alertness.

POM POM PULLAWAY.

(5 to 30 or more players.)

This game is often played between the curbings of a city street, but is suitable for any open space which is large enough to permit two lines to be drawn across with a space of from 30 to 50 feet between them. All players stand on one side behind one of the dividing lines, except one player who is “It” and who stands in the center of the open ground. He calls:

“Pom Pom Pullaway!

If you don’t come, I’ll pull you away!”

whereupon all the players must run across the open space to the safety line on the opposite side, the one who is “It” trying to tag as many as possible before they reach that line. Anyone tagged by the one who is “It” joins him in helping to catch other players as they dash across the open space; but the one originally “It” remains the caller throughout the game. The player who is “It” again calls “Pom Pom Pullaway,” etc., and all the uncaught players must run for their original goal. The players run from one goal to the other in this way until all have been caught. Then the game starts all over again. The first one to be caught in one game becomes “It” for the next game.

NOTE.—A splendid game, especially for boys.

THREE DEEP.

(15 to 60 players.)

All the players but two form in a double circle facing inward, one player directly behind another. There are several methods of forming players into this double circle. One method is to have the players march in column two by two, form in a circle, and all face inward. Another method is to have the players form in a circle in single file, then every second player step in front of his neighbor on the right.

The two odd players, of whom one is runner and the other chaser, start outside of the circle, generally one of them starting on one side of the circle and the other opposite. The object of the game is for the chaser to tag the runner. The runner may save himself by running into the circle and stopping in front of any couple, whereupon, that file having been made "three deep," the outer player or third man can be tagged, so he becomes runner and tries to evade the chaser. He may save himself in the same way by stopping in front of a couple.

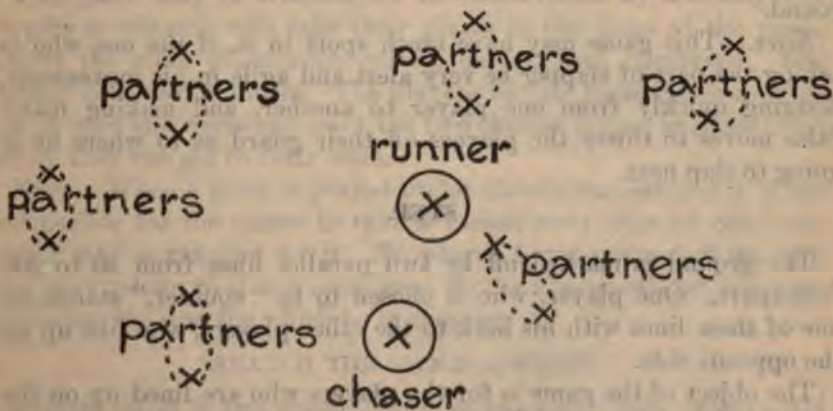
Should the chaser tag the runner, they exchange places, the runner becoming chaser and the chaser becoming the runner.

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NOTE.—This is a good chasing game.

THIRD MAN.

This game is another form of Three Deep, but instead of the circular formation the players are scattered irregularly over the play-



ground. All of the players but two take partners and scatter in any irregular way. The players forming each couple stand facing each other, with the distance of a long step between them. To make a

success of the game the distance between the various couples should be considerable.

Of the two odd players, one is runner and the other chaser, the object of the latter being to tag the runner. The runner may take refuge between any two players who are standing as a couple. The moment that he does so, the one toward whom his back is turned becomes "third man" and must in turn try to escape being tagged by the chaser. Should the chaser tag the runner, they exchange places, the runner immediately becoming chaser and the chaser becoming runner.

NOTE.—This game keeps all the players on the alert.

THIRD SLAP.

The players should be divided into groups of from 5 to 10 each. One in each group is chosen to be "it"; the others line up in front of him, all standing at a distance of from 30 to 50 feet from a goal previously decided on. The players in the line hold their hands extended forward the length of the forearm, the elbows being bent and touching the sides; the palms should be turned downward.

The one who is "it" tries to slap the hands of any of the players, who may evade him by bending the hands downward, upward, or sideways at the wrist, but may not withdraw the arm or change the position of the elbow. Any player who receives three slaps, whether on one or both hands, immediately upon receiving the third slap, chases the one who is "it" toward the goal. Should the slapper be caught before he reaches the goal, he must continue as before, but if he succeeds in reaching the goal in safety, he changes places with his pursuer, who becomes "it" or slapper for the next round.

NOTE.—This game may have much sport in it, if the one who is taking the part of slapper be very alert and agile in his movements, dodging quickly from one player to another, and making many false moves to throw the players off their guard as to where he is going to slap next.

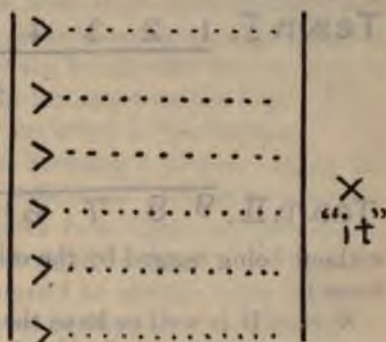
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NUMBERS CHANGE.

(10 or more players.)

The players stand in a large circle and are numbered consecutively. One player takes his place in the center. He calls two numbers, and the players whose numbers are called must change places while the center player tries to secure one of their places. The one who is left without a place becomes the center player.

This game may be adapted for the schoolroom by selecting two players as chasers, who take their places in the front of the room. All of the other players are seated, having been numbered. The teacher calls two numbers. The players having those numbers must rise at once and exchange seats, the two chasers trying to catch them before they can get to their seats.

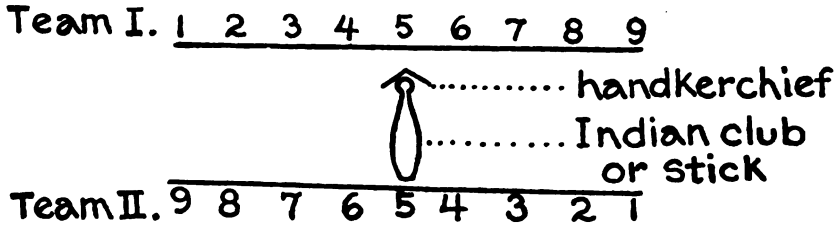
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One team begins to number from one end of the line, and the other team begins at the other end.

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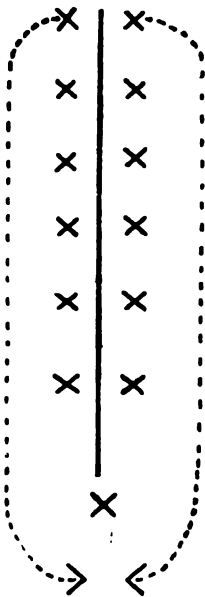
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(11 to 25 players.)

An odd number of players is required for this game. One is chosen for catcher, who stands with his back to the other players. The other players stand in couples in a long line behind, facing in the same direction that he does. The catcher should be not less than 10 feet in front of the first couple.



The catcher calls, "Last couple out." Then the last pair in the line run toward the front (the right-hand one on the right side of the double line, and the left-hand one on the left side) and try to join hands in front of the catcher before he tags either of them. The catcher must not chase them before they are in line with him, and must not turn his head to see when or whence the runners are coming. The runners should vary the method of approach, sometimes both circling far out beyond on each side, or one of them doing this and the other running close to the lines.

If the catcher succeeds in catching one of the players before that player can clasp hands with his partner, the player tagged becomes the catcher and the former catcher and the other player form a couple and take their places at the head of the line, which should move backward to make room for them. If neither is caught, they take their places at the head of the line, and the catcher calls again for the "last couple out."

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(18 or more players.)

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NOTE.—This game is very good for developing skill and alertness.

Chain tag.

One player is chosen to be the first link of the chain. When he has tagged a player, this player locks arms with him and forms the second link. These two links, without separating, add a third link by tagging another player who locks arms with the first player caught. In like manner other links are added, the chain lengthening until it includes all the players as links.

Partner tag.

All the players but two hook arms in couples. Of the two who are free, one is "It" or chaser, and the other the runner. The runner may save himself by locking arms with either member of any couple he chooses. Whenever he does so, the third party of that group becomes runner and must save himself in like manner. If the runner be tagged at any time he becomes "It" or chaser; and the chaser becomes runner.

NOTE.—To get the proper sport into this game, the couples should run and twist and resort to any reasonable maneuver to elude the runner, who is likely at any time to lock arms with one of them and so make the other the runner.

BULL IN THE RING.

(For boys.)

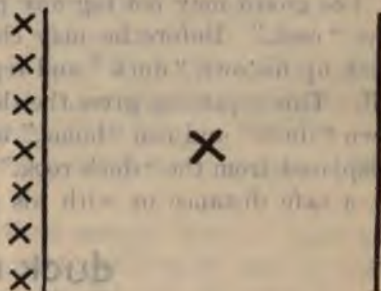
All but one of the players stand in a circle with hands firmly clasped. The odd player stands in the center and is the "bull." The "bull" tries to break through the ring by parting the hands of any of the players. If he breaks through, the two players whose hands he parted immediately give chase to him, and the one catching him becomes the "bull."

NOTE.—This game is better for boys, as it may be rough.

BLACK TOM.

Two parallel lines are drawn on the ground with a space of from 30 to 50 feet between them. All the players except one stand beyond one of these lines. In the middle territory between the lines the one player who is chosen to be "it" takes his place and cries, "Black Tom! Black Tom! Black Tom!" repeating the words three times as here given; whereupon the other players must all rush across to the opposite line, being chased by the center player, who tags any that he can. Any one so tagged joins him thereafter in chasing the others.

The particular characteristic lies in the fact that the center player, instead of saying "Black Tom," may trick or tantalize the runners by saying, "Yellow Tom," or "Blue Tom," or anything else that he chooses. Any player who starts



to run upon such a false alarm is considered captive and must join the players in the center. This is also true for any player who starts before the third repetition of "Black Tom."

Another way of giving a false alarm is for any of the center players except the original "it" to give the signal for running. Any runner starting in response to such a signal from any of the chasers, except the original "it," thereby becomes captive and must join the players in the center. The first one to be caught is center player, or "it," for the next game.

NOTE.—A game of alertness and concentration. If the teacher wishes to change the name, using a Spanish name instead of "Black Tom," she can do so.

DUCK ON ROCK.

Equipment: Bean bag, or stone.

Each player is provided with a bean bag or a stone, called a "duck," about the size of a baseball. A large rock or post is chosen as the "duck rock," and 25 feet from it a throwing line is drawn. One player places his "duck" on this "duck rock" and stands by it as a guard. (This guard is selected at the beginning by all the players throwing their "ducks" at the "duck rock" from the throwing line. The one whose "duck" falls nearest to the rock becomes the first guard.) The other players stand behind the throwing line and take turns in throwing at the "duck" on the rock, trying to knock it from the rock. After each throw a player must recover his own "duck" and run back "home" beyond the throwing line.

Should he be tagged by the guard while trying to do this, he must change places with the guard. The guard may tag him at any time when he is in front of the throwing line, unless he stands with his foot on his own "duck" where it first fell. He may stand in this way as long as necessary, awaiting an opportunity to run "home"; but the moment he lifts his "duck" from the ground, or takes his foot from it, he may be tagged by the guard. Having once lifted his "duck" to run "home" with it, a player must not again place it on the ground.

The guard may not tag any player unless his own "duck" be on the "rock." Before he may chase the thrower, he must therefore pick up his own "duck" and replace it should it have been knocked off. This replacing gives the thrower an opportunity to recover his own "duck" and run "home," but should the "duck" not have been displaced from the "duck rock," the thrower may have to wait either at a safe distance or with his foot on his own "duck" if he can

duck rock ●

duck guard X

throwing line x x x x x x

get to it, until some other thrower has knocked the "duck" off the rock. Several players may thus be waiting at one time to recover their "ducks," some of them near the "duck rock," each with a foot on his "duck," others at a distance. Any player tagged by the guard must change places with him, placing his own "duck" on the rock. The guard must quickly recover his "duck" and run for the throwing line after tagging a player, as he in turn may be tagged as soon as the new guard has placed his "duck" on the rock.

A stone that falls very near the "duck rock" without displacing the "duck" may also prove disastrous to the thrower. Should a stone fall within a hand span (stretching from finger tip to thumb) of the "duck rock" without knocking off the "duck," the guard challenges the thrower by shouting "Span!" and proceeds to measure with his hands the distance between the "duck rock" and the other player's "duck." Should the distance be less than a hand's span, the thrower of the stone has to change places with him, put his own "duck" on the rock, and become the guard.

NOTE.—This also is a game for boys. It teaches them to become expert throwers. Great care should be used that the boys do not throw stones at each other.

ANIMAL BLIND MAN'S BUFF.

(10 or more players.)

One player is blindfolded and stands in the center of a circle, with a stick or cane in his hand. The other players dance around him in a circle until he taps on the floor with his cane, when they must stand still. The "blind man" thereupon points his cane at some player, who must take the opposite end of the cane in his hand. The "blind man" then commands him to make a noise like some animal, such as a cat, dog, cow, sheep, lion, donkey, duck, parrot. From this the "blind man" tries to guess the name of the player. If the guess is correct, they change places. If wrong, the game is repeated with the same "blind man."

The players should try to disguise their natural voices as much as possible when imitating the animals, and much sport may be had through the imitation. Players may also disguise their height, to deceive the "blind man," by bending their knees to seem shorter or rising on their toes to seem taller. Where there are 30 or more players, two "blind men" should be placed in the center.

NOTE.—In playing this game, it is very important that the blindfold be refolded on a clean side of the handkerchief, otherwise contagious diseases may be passed from child to child.

STILL POND.

One player is blindfolded; the others scatter about the playground. The blindfolded player is led to the center of the playground, and asked: "How many horses has your father in his stable?"

He replies: "Three."

"What color are they?"

"Black, white, and gray."

"Turn around three times and catch whom you may."

The blindfolded player is then spun around so as to confuse his sense of direction. He then says, "Still pond; no more moving," whereupon the other players must stand still, being allowed only three steps thereafter. The blindfolded player begins to grope for the others. When he catches one, he must guess by touching the hair, dress, etc., whom he has caught. If he guesses correctly, the player changes places with him; if incorrectly, he must go on with his search. The players may resort to any reasonable devices for escaping the hands of the groping "blind man," such as stooping or dodging, so long as they do not take more than three steps. When caught, a player may try to disguise his identity by making himself shorter, etc.

"tree." The "rabbit" already there must run for another "tree." Whenever the "dog" catches a "rabbit" they change places, the "dog" becoming the "rabbit" and the "rabbit" the "dog." If at any time a "tree" is empty, the "dog" may become a "rabbit" by finding shelter in this empty "tree," whereupon the odd "rabbit" must take the part of the "dog."

NOTE.—This is a more advanced way of playing Squirrel in Tree and is a very good game to develop alertness.

POM POM PULLAWAY.

(5 to 30 or more players.)

This game is often played between the curbing of a city street, but is suitable for any open space which is large enough to permit two lines to be drawn across with a space of from 30 to 50 feet between them. All players stand on one side behind one of the dividing lines, except one player who is "It" and who stands in the center of the open ground. He calls:

"Pom Pom Pullaway!

If you don't come, I'll pull you away!"

whereupon all the players must run across the open space to the safety line on the opposite side, the one who is "It" trying to tag as many as possible before they reach that line. Anyone tagged by the one who is "It" joins him in helping to catch other players as they dash across the open space; but the one originally "It" remains the caller throughout the game. The player who is "It" again calls "Pom Pom Pullaway," etc., and all the uncaught players must run for their original goal. The players run from one goal to the other in this way until all have been caught. Then the game starts all over again. The first one to be caught in one game becomes "It" for the next game.

NOTE.—A splendid game, especially for boys.

THREE DEEP.

(15 to 60 players.)

All the players but two form in a double circle facing inward, one player directly behind another. There are several methods of forming players into this double circle. One method is to have the players march in column two by two, form in a circle, and all face inward. Another method is to have the players form in a circle in single file, then every second player step in front of his neighbor on the right.

The two odd players, of whom one is runner and the other chaser, start outside of the circle, generally one of them starting on one side of the circle and the other opposite. The object of the game is for the chaser to tag the runner. The runner may save himself by running into the circle and stopping in front of any couple, whereupon, that file having been made "three deep," the outer player or third man can be tagged, so he becomes runner and tries to evade the chaser. He may save himself in the same way by stopping in front of a couple.

Should the chaser tag the runner, they exchange places, the runner becoming chaser and the chaser becoming the runner.

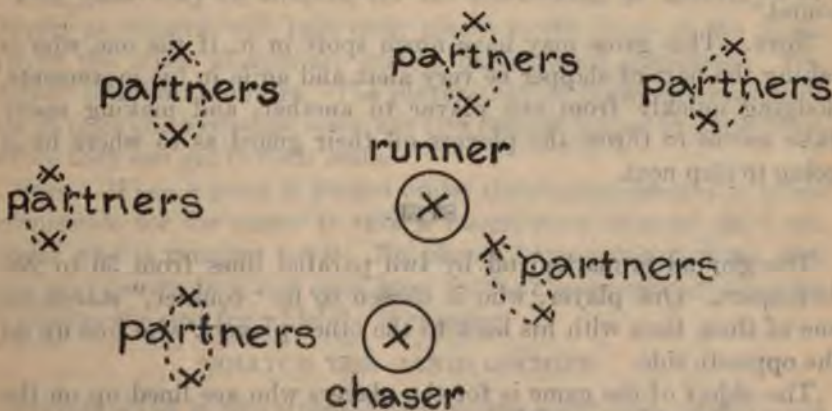
Both runner and chaser may dash through the circle, but may not pause for a moment within the circle, except when the runner stops in front of some couple. When players confuse the play by hesitating while running through the circle, this privilege of running through is sometimes forbidden, all the chasing being confined to the outside of the circle.



NOTE.—This is a good chasing game.

THIRD MAN.

This game is another form of Three Deep, but instead of the circular formation the players are scattered irregularly over the play-



ground. All of the players but two take partners and scatter in any irregular way. The players forming each couple stand facing each other, with the distance of a long step between them. To make a

success of the game the distance between the various couples should be considerable.

Of the two odd players, one is runner and the other chaser, the object of the latter being to tag the runner. The runner may take refuge between any two players who are standing as a couple. The moment that he does so, the one toward whom his back is turned becomes "third man" and must in turn try to escape being tagged by the chaser. Should the chaser tag the runner, they exchange places, the runner immediately becoming chaser and the chaser becoming runner.

NOTE.—This game keeps all the players on the alert.

THIRD SLAP.

The players should be divided into groups of from 5 to 10 each. One in each group is chosen to be "it"; the others line up in front of him, all standing at a distance of from 30 to 50 feet from a goal previously decided on. The players in the line hold their hands extended forward the length of the forearm, the elbows being bent and touching the sides; the palms should be turned downward.

The one who is "it" tries to slap the hands of any of the players, who may evade him by bending the hands downward, upward, or sideways at the wrist, but may not withdraw the arm or change the position of the elbow. Any player who receives three slaps, whether on one or both hands, immediately upon receiving the third slap, chases the one who is "it" toward the goal. Should the slapper be caught before he reaches the goal, he must continue as before, but if he succeeds in reaching the goal in safety, he changes places with his pursuer, who becomes "it" or slapper for the next round.

NOTE.—This game may have much sport in it, if the one who is taking the part of slapper be very alert and agile in his movements, dodging quickly from one player to another, and making many false moves to throw the players off their guard as to where he is going to slap next.

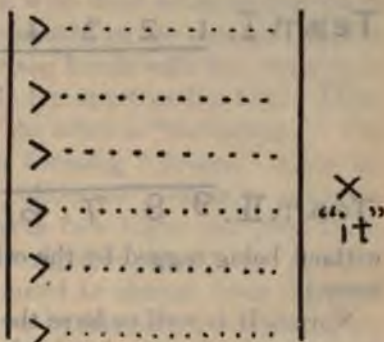
STEP.

The ground is marked off by two parallel lines from 50 to 200 feet apart. One player, who is chosen to be "counter," stands on one of these lines with his back to the other players, who line up on the opposite side.

The object of the game is for the players who are lined up on the rear line to advance until they cross the line where the counter is stationed. They may advance only by short stages, however, during which the player in front counts 10.

The game starts by this forward player counting 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, loudly and rapidly, the other players moving forward while he does this; but as soon as he says "10" they must stand still, and he at once turns to look at them.

He will call the name of any player or players whom he sees moving, and any so called must go back to the starting line and begin over again. This counting of 10 by the one player and moving forward of the others continues until all have crossed the line where the counter stands. The first one over changes places with him for the next game.



NOTE.—The players will learn to use much caution in moving forward, often stopping before the count of 10, to be sure that they shall not be caught in motion. The progress thus made may seem slower than that of those who dash forward to the last moment, but, as with the proverbial hare and tortoise, this slower but continuous method often wins.

NUMBERS CHANGE.

(10 or more players.)

The players stand in a large circle and are numbered consecutively. One player take his place in the center. He calls two numbers, and the players whose numbers are called must change places while the center player tries to secure one of their places. The one who is left without a place becomes the center player.

This game may be adapted for the schoolroom by selecting two players as chasers, who take their places in the front of the room. All of the other players are seated, having been numbered. The teacher calls two numbers. The players having those numbers must rise at once and exchange seats, the two chasers trying to catch them before they can get to their seats.

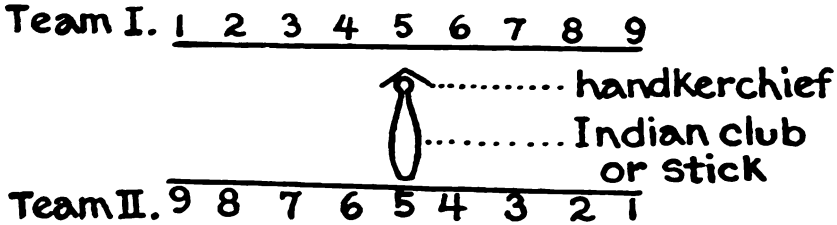
NOTE.—When a game is played under these circumstances it is not permissible for the chaser to take a vacant seat; he must catch the player who is running for it. No player, having once left his own seat, may return to it but must keep up the chase until he is caught or reaches the seat for which he is running.

"SNATCH THE HANDKERCHIEF."

Players stand in two straight lines facing each other. Each child has a number.

One team begins to number from one end of the line, and the other team begins at the other end.

The teacher calls a number, for example, "No. 7"; then each of the two "No. 7" players tries to snatch the handkerchief from the Indian club (without upsetting it) and get back to his own place



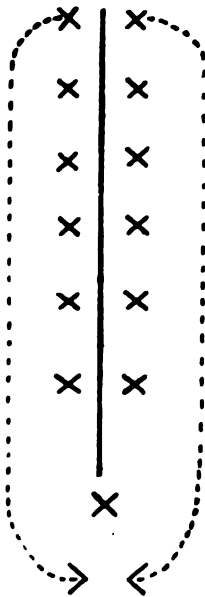
without being tagged by the other "No. 7." (The teacher keeps the score.)

NOTE.—It is well to have the boys and girls on opposite sides. It is a splendid game to develop both skill and alertness.

LAST COUPLE OUT.

(11 to 25 players.)

An odd number of players is required for this game. One is chosen for catcher, who stands with his back to the other players. The other players stand in couples in a long line behind, facing in the same direction that he does. The catcher should be not less than 10 feet in front of the first couple.



The catcher calls, "Last couple out." Then the last pair in the line run toward the front (the right-hand one on the right side of the double line, and the left-hand one on the left side) and try to join hands in front of the catcher before he tags either of them. The catcher must not chase them before they are in line with him, and must not turn his head to see when or whence the runners are coming. The runners should vary the method of approach, sometimes both circling far out beyond on each side, or one of them doing this and the other running close to the lines.

If the catcher succeeds in catching one of the players before that player can clasp hands with his partner, the player tagged becomes the catcher and the former catcher and the other player form a couple and take their places at the head of the line, which should move backward to make room for them. If neither is caught, they take their places at the head of the line, and the catcher calls again for the "last couple out."

NOTE.—This is a very good game to develop self-control.

STREET AND ALLEY.

(18 or more players.)

The players stand in rank and file, with four or more players in each rank and in each file. The files should be far enough apart so that the children in one file can just clasp hands with the children in the next file. The ranks should be as far apart as the files. There are two extra players, one a "thief" the other a "policeman." The players join hands across the ranks, forming "streets," while the "thief" and "policeman" run, the "policeman" trying to catch the "thief." At a given signal, all players face right and join hands along the file, forming passageways at right angles to the "streets." These are called "alleys." The command to change from "street" to "alley," or vice versa, may be given by blowing a whistle or by calling "street" and "alley" alternately. To make the game lively, the command to change from "street" to "alley" should be given often. The "thief" and "policeman" may run only where the passageways are open. They are not permitted to break through the joined hands or duck under them. When the "policeman" catches the "thief," two players from the ranks are chosen to take their places and the former "thief" and "policeman" step into the places left vacant in the ranks.

NOTE.—This is a splendid exercise. Develops alertness.

TAG GAMES.

In Tag, one player is "chaser," or "it," and tries to touch or "tag" the other players, the one tagged then becoming chaser. There are many kinds of "tag" games, and it adds to the interest and fun to vary them.

Japanese tag.

In this form of the game, whenever a player is touched or tagged he must place his left hand on the spot touched, whether it be his back, knee, elbow, ankle, or any other part of the body, and in that position must chase the other players. He is relieved of this position only when he succeeds in tagging some one else.

As in other tag games, where there are a large number of players several players take the part of the tagger, or "it," at the same time.

NOTE.—By keeping the left hand on the spot tagged the player develops skill and the game is more amusing.

Stiff-knee tag.

All players keep stiff knees and play tag. (For older children.)

NOTE.—This is a good game, and also a good leg-muscle exercise.

Nose-and-toes tag.

Players are safe from being tagged when the nose is held with one hand and (at the same time) toes of foot with the other hand. (This game is very amusing, especially to "break in" a group.)

NOTE.—This is a good back exercise.

Cross tag.

"It" starts after any player he chooses, but must change his course to pursue any other player who runs between "It" and the one he is chasing. Thus a fresh runner may at any time divert "It" from a tired player who is nearly tagged.

NOTE.—This game is very good for developing skill and alertness.

Chain tag.

One player is chosen to be the first link of the chain. When he has tagged a player, this player locks arms with him and forms the second link. These two links, without separating, add a third link by tagging another player who locks arms with the first player caught. In like manner other links are added, the chain lengthening until it includes all the players as links.

Partner tag.

All the players but two hook arms in couples. Of the two who are free, one is "It" or chaser, and the other the runner. The runner may save himself by locking arms with either member of any couple he chooses. Whenever he does so, the third party of that group becomes runner and must save himself in like manner. If the runner be tagged at any time he becomes "It" or chaser; and the chaser becomes runner.

NOTE.—To get the proper sport into this game, the couples should run and twist and resort to any reasonable maneuver to elude the runner, who is likely at any time to lock arms with one of them and so make the other the runner.

BULL IN THE RING.

(For boys.)

All but one of the players stand in a circle with hands firmly clasped. The odd player stands in the center and is the "bull." The "bull" tries to break through the ring by parting the hands of any of the players. If he breaks through, the two players whose hands he parted immediately give chase to him, and the one catching him becomes the "bull."

NOTE.—This game is better for boys, as it may be rough.

BLACK TOM.

Two parallel lines are drawn on the ground with a space of from 30 to 50 feet between them. All the players except one stand beyond one of these lines. In the middle territory between the lines the one player who is chosen to be "it" takes his place and cries, "Black Tom! Black Tom! Black Tom!" repeating the words three times as here given; whereupon the other players must all rush across to the opposite line, being chased by the center player, who tags any that he can. Any one so tagged joins him thereafter in chasing the others.

The particular characteristic lies in the fact that the center player, instead of saying "Black Tom," may trick or tantalize the runners by saying, "Yellow Tom," or "Blue Tom," or anything else that he chooses. Any player who starts to run upon such a false alarm is considered captive and must join the players in the center. This is also true for any player who starts before the third repetition of "Black Tom."

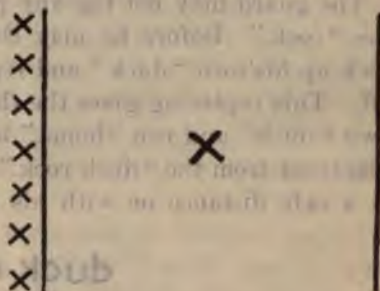
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NOTE.—A game of alertness and concentration. If the teacher wishes to change the name, using a Spanish name instead of "Black Tom," she can do so.

DUCK ON ROCK.

Equipment: Bean bag, or stone.

Each player is provided with a bean bag or a stone, called a "duck," about the size of a baseball. A large rock or post is chosen as the "duck rock," and 25 feet from it a throwing line is drawn. One player places his "duck" on this "duck rock" and stands by it as a guard. (This guard is selected at the beginning by all the players throwing their "ducks" at the "duck rock" from the throwing line. The one whose "duck" falls nearest to the rock becomes the first guard.) The other players stand behind the throwing line and take turns in throwing at the "duck" on the rock, trying to knock it from the rock. After each throw a player must recover his own "duck" and run back "home" beyond the throwing line.



Should he be tagged by the guard while trying to do this, he must change places with the guard. The guard may tag him at any time when he is in front of the throwing line, unless he stands with his foot on his own "duck" where it first fell. He may stand in this way as long as necessary, awaiting an opportunity to run "home"; but the moment he lifts his "duck" from the ground, or takes his foot from it, he may be tagged by the guard. Having once lifted his "duck" to run "home" with it, a player must not again place it on the ground.

The guard may not tag any player unless his own "duck" be on the "rock." Before he may chase the thrower, he must therefore pick up his own "duck" and replace it should it have been knocked off. This replacing gives the thrower an opportunity to recover his own "duck" and run "home," but should the "duck" not have been displaced from the "duck rock," the thrower may have to wait either at a safe distance or with his foot on his own "duck" if he can

duck rock ●
duck guard X

throwing line
 x x x x x x

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He replies: "Three."

"What color are they?"

"Black, white, and gray."

"Turn around three times and catch whom you may."

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RACES AND RELAYS.

Races of all kinds, when not overdone, are excellent exercise and develop competition in a way that no other form of play does. Races develop alertness and bring out a "freeness" of motion that is splendid.

Relay races are even better, for they develop a "team spirit," which is one of the highest forms of play. To teach any kind of play that makes a child forget his own individual self and play his best for the team is to bring out the best in that child.

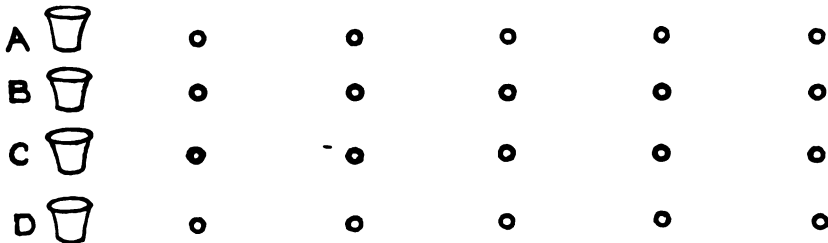
Almost all races can be played as relays. It is best to teach the race first and afterwards choose teams and make it a relay race. It is important that every child understand the relay. It is best not to play relay races with young children.

Teach the children to play with all their might, but cultivate a sense of honor. Teach them that any victory not earned strictly by fair play is a disgrace to them and their team. Develop the spirit of trust. To be trusted is far better than to be praised. Defeat that is the result of an honest trial of strength is honorable defeat.

POTATO RACE.

The space for a simple potato race should be marked off thus:

At each "o" is placed a potato or some other small and uniform-sized object. At each of the starting points (A, B, C, D) a basket is placed. At the signal from a "starter" all run to the first "po-



tato" in their "line," pick it up, run back to the basket with it, put it in the basket and run for the next "potato" and put it in the basket, and so on until all are in the basket. The winner then plays the winner of the next set of four and so on.

OBSTACLE RACE.

An "obstacle race" is a race in which the players must overcome certain obstacles; for example, the players must jump over boxes (the obstacles must be alike for all players), crawl through barrels, turn handsprings, or perform other "stunts."

NOTE:—It is very amusing if the players are dressed in "funny clothes."

WHEELBARROW RACE.

The first player is on his hands and knees and his partner stands in back of him and grasps him at the knees, thus making a "wheelbarrow." They then race another similar "wheelbarrow" to a goal line about 20 feet from the starting line.

NOTE:—This game is better for boys. It is a splendid back exercise. Great care should be taken that the one who is standing grasps his partner under the knees and not at the ankles.

PEANUT RACE.

The players are in the same formation as for Potato Race. They use peanuts instead of potatoes and pick them up with either a knife or a spoon and carry them to the basket one at a time as in the potato race.

BEAN-BAG AND BALL GAMES.

A wide variety of games can be played with bean bags or balls. Hard balls should not be used where small children are playing, but indoor baseballs, volley balls, or other balls which are filled with air make possible the playing of many games, particularly competitive games for older children.

To make bean bags, take two 6-inch squares of heavy cloth, such as duck, sew three sides, put in 1 cupful of beans, and sew the fourth side.

HOT POTATO.

This is a game especially popular with children under 10. The players can sit on the ground in a circle or in their seats (if in the schoolroom). An indoor baseball or a knotted handkerchief is the "potato."

A "make-believe" oven, in which to "bake" the potato, is formed by holding the hands around the ball on the ground. One player, who is "it," "heats" the potato. After he holds the potato in his hands for a few seconds, it is supposed to be very hot. He then bats the ball with the palm of his hands across the circle on the ground. The player nearest to whom it rolls must bat it quickly across the circle to someone else. No one must pick up the "hot potato," or hold it in his hands, even for a second, for fear he will "burn his fingers." If the one who is "it" taps any of the players while the potato is touching him, that player becomes "it."

CALL BALL.

(10 to 30 players.)

The players are numbered and form a circle, one of the players standing in the center.

The player in the center tosses the ball high up within the circle, at the same time calling the number of some player. The one called must quickly run to catch the ball on the fly or on the first bounce. If he catches the ball he tosses it up and calls the number of some other player. If the ball is not caught, the first player again tosses it up.

BALL TAG.

(5 or more players.)

The players scatter promiscuously. One player, who is "it," tries to hit one of the other players with a soft ball or a bean bag. Any

player thus hit becomes "it" and must try to tag others in the same way. When a player fails to hit the one at whom he aims, he must pick up the ball and throw it at some one else. In the schoolroom, where the seats and desks interfere with this, any adjacent player may pick up the ball and throw it back to the one who is "it." Players may dodge in any way, as by stooping, jumping, or moving sidewise.

When there are many playing, it is advisable to have two or three who are "it," in which case there will be two or three balls or bean bags in use at the same time, and the game is much more rapid.

If played in the schoolroom, a light gas ball or bean bag should be used. Outdoors, anything from a light-weight hand ball to a basket ball is suitable. Hard balls should be avoided.

CENTER CATCH BALL.

(10 to 30 players.)

The players stand in a circle, with an odd player in the center. He tries to catch the ball, which is tossed rapidly from one circle player to another. If he catches the ball, the one who last touched the ball changes places with him.

DODGE BALL.

(10 to 60 players.)

The players are divided into two equal groups. One group forms a circle (this is not marked on the ground). The larger the circle the more sport in the game. The other group stands within the circle, scattered about. The object of the game is for the circle men to hit the center men with a basket ball or volley ball, the center men dodging to evade this. They may jump, stoop, or resort to any means of dodging except leaving the ring. Any player hit on any part of his body at once joins the circle men. The last player to remain in the center is considered the winner. The groups as originally divided then change places for the next game, the center men becoming circle players, and the circle men going to the center.

The center players merely dodge the ball. The ball is returned to the circle either by a toss from a center man or by a circle man stepping in for it if it should not roll within reach. When two center men are hit by one throw of the ball, only the first one hit leaves the center.

BEAN-BAG RING THROW.

(10 or more players.)

This game may be played with bean bags, or, when out of doors, with small blocks of wood, stones, or shells. The players are divided into several groups of equal numbers. A small ring measuring from 12 to 18 inches in diameter is drawn on the ground or floor opposite each group of players, who stand in single file. The leader of each file "toes" a line drawn across the ground from 10 to 15 feet from the circles. Each file of players is provided with six bean bags or other objects for throwing, as indicated above.

At a signal the leader of each file throws his bags one by one toward the circle, and scores one point for each bag that lands within the circle. A bag that touches the line does not count. The player then takes up his bags and runs back to the rear of the file, giving the bags as he passes to the front player of his file, who should have moved up to the line. These second players, in turn, all begin throwing on a signal. The file wins which has the highest score when all have thrown.

It is advisable to have some one to act as scorer for all of the files, though it is practicable for the first player in each file to act as scorer for his file.

HAND-OVER-HEAD BEAN BAG.

(10 or more players.)

This is a relay passing race, the different rows of players competing with each other in passing bean bags backward over the head.

The players should all be seated, there being the same number in each row of seats. On each front desk a bean bag should be laid. At a signal the first player in each row lifts the bean bag over his head and drops it (it should not be thrown) on the desk behind him, immediately clasping his hands on his own desk. The next player either catches the bag or picks it up from his desk, and passes it backward in the same manner. It is thus passed quickly to the rear of the line. When the last pupil receives it he runs forward at once to the front of the line. As soon as he reaches the front desk the entire row of players moves backward one seat, and the player who ran forward takes the front seat, immediately passing the bag backward to the player next behind him.

The play thus continues until the original occupant of the front seat has again returned to it. As soon as he is seated he should hold the bean bag up with outstretched arm, as a signal that his row has finished. The row wins whose leader does this first.

BEAN-BAG CIRCLE TOSS.

(5 to 20 players.)

There should be a bean bag for each of the players except one. The players form a circle, separated from each other by a small space. At a signal from a leader each player turns toward his right-hand neighbor and tosses his bean bag to him, turning at once to receive the bag which is coming to him from the left. The game should move rapidly, but, of course, this is a matter of skill and may have to be acquired. With very little children it may be advisable first to play the game with only half as many bags as there are children, till they grow accustomed to tossing and turning quickly to catch. Balls may be used instead of bean bags if desired.

When the tossing has gone once or twice around the circle to the right, the direction should be changed to the left. It is well to have one of the bean bags of a different color from the others, so as to know when the circle has been completed. Any player failing to catch a bag must pick it up and toss it regularly to his neighbor.

BEAN-BAG BOARD.

(5 to 30 players.)

A board about 2 feet wide by 3 feet long is necessary for this game. Four holes to represent the eyes, nose, and mouth of a face should be cut in the board—two circles 5 inches in diameter for the eyes, an 8-inch triangle for the nose, and a 10 by 4 inch ellipse for the mouth. The board should be placed against a wall or fence or be supported by a hinged prop. The players stand at a line from 10 to 15 feet from the board. Each player has five bean bags, or five may be used for the entire group, the bags being recovered for each thrower in turn. A bag thrown into the mouth counts 5; into the nose, 10; into either eye, 20. The player wins who first scores 100, or the player having the highest score after all the players have had four turns to throw the bean bags may be considered the winner.



Where there are a large number of players it is desirable to have more than one board, so that the players may be divided into several groups and make the game more rapid.

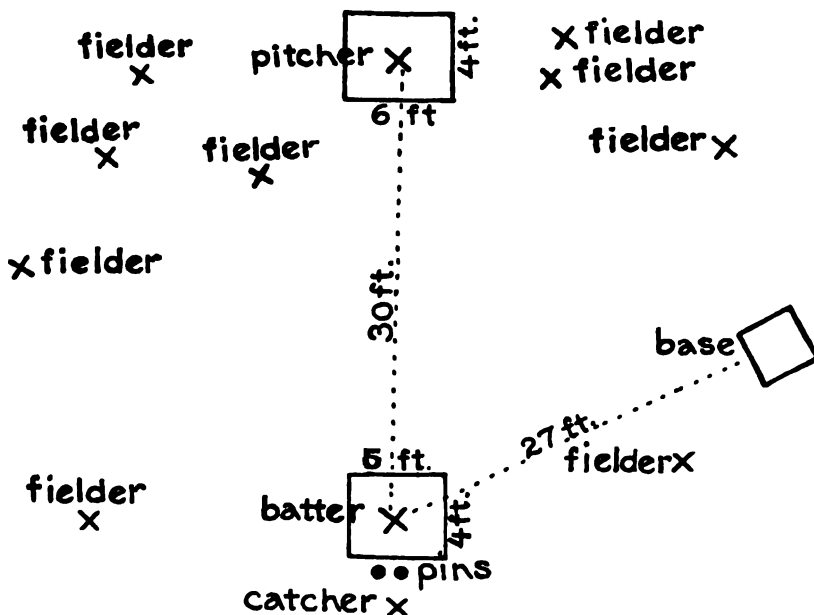
PIN BALL.

Equipment needed.

An indoor baseball, a baseball bat, and two Indian clubs for pins. (If Indian clubs are not available empty tin cans or sticks may be used for pins.)

Players.

Pitcher, catcher, and any number of fielders for each team.

**The ground.**

The game is played on a baseball field with only one base. Batter's box should be 4 feet wide and 5 feet long. Pitcher's box should be 4 feet wide and 6 feet long. Distance from center of batter's box to center of pitcher's box should be 30 feet. Distance to first base should vary with the skill and age of the players. It should not be more than 27 feet. The pins are placed 3 inches back of batter's box, 1 foot apart.

The batter strikes at balls thrown by the pitcher, as in baseball. The ball must be thrown underhand. The batter may be put out any time his bat is not touching the ground within the limits of the batter's box, by an opponent's bowling one or both of the pins down. He runs for base (1) when he hits the ball, (2) when the catcher fails to catch the ball, or (3) any other time when he thinks he has a chance to get to the base and back before his pins can be bowled down. He scores every time he gets to base and back without being put out. He remains at bat until he is put out. Any opponent may

bowl the pins down when the bat is not touching the ground within the batter's box, but it is usually best to throw the ball to the catcher and have him bowl them down.

A caught fly ball is out.

Three outs end the inning.

There are no strikes or fouls.

VOLLEY BALL.

Volley ball is a splendid team game. Rules and complete instructions for laying out the court can be purchased, in either English or Spanish, at various bookstores and news stands in Porto Rico (price, 10 cents).



SUGGESTED GAME PROGRAMS.

I. Schoolroom games for younger children (6 to 10 years).

Active game (develops alertness) :

“Cat and Mice.”

Quiet game (develops hearing) :

“Who is Knocking at my Door?”

Active game (running game) (develops alertness) :

“Slap Jack.”

Quiet game (develops observation) :

“Who has Gone from the Ring?”

Active game (develops alertness, skill, and concentration) :

“Fox and Squirrel.”

Quiet game (trains little children to notice colors, distinguish materials, etc.) :

“I See.”

Active game (each of these games develops alertness, self-control, and concentration) :

“I say ‘Stoop,’”

or

“Magic Music.”

II. Playground games for younger children (6 to 10 years).

Active game (running game) (develops alertness and concentration) :

“Cat and Rat.”

Active game (running game) :

“Have you Seen my Sheep?”

Quiet game (sitting down) (develops self-control and memory) :

“Apples Red.”

Active game (running game) (a good introduction to more difficult games) :

“Squirrel in Trees.”

Quiet game (sitting down) (develops self-control, concentration, and observation) :

“Button, Button.”

Active game (a more complicated game for little children) :

“Water Sprite.”

I. Schoolroom games for older children (over 10 years).

Active game (running game) (develops alertness) :

“Tag-the-Wall Relay.”

Quiet game (either of these games develops observation) :

“ I Spy ”

or

“ Indian Running.”

Active game (develops alertness) :

“ Going to Jerusalem.”

Active game (develops alertness and teaches children to take risks and make dares) :

“ Midnight.”

Quiet game (each of these games develops imagination and dramatic tendencies) :

“ Charades ”

or

“ Dumb Crambo.”

Active game (develops self-control) :

“ Step.”

II. Playground games for older children (over 10 years).

Active game (either game is a good running game and develops alertness; especially good for boys) :

“ Pom Pom Pullaway ”

or

“ Three Deep.”

Active game :

“ Blind Man’s Buff ”

or

“ Still Pond.”

Quiet game (sitting down) (develops alertness) :

“ Numbers Change.”

Active game (chasing and catching game) :

Tag game (Japanese tag or stiff-legged or cross tag, etc.).

Quiet game (sitting down) (develops ability to think quickly) :

“ Fire, Air, Water.”

Active game (either of these games develops alertness and concentration) :

“ Black Tom ”

or

“ Dodge Ball.”

REFERENCE BOOKS.

Books of games and folk dances:

- Games for the Playground, Home, School, and Gymnasium (456 pp.), by Jessie H. Bancroft. Published by MacMillan Co., Fifth Avenue, N. Y.
- What to do at Recess (33 pp.), by George E. Johnson. Published by Ginn and Co., Boston.
- Songs and Games for Little Ones (136 pp.), by Walker and Greenough. Published by Oliver Ditson and Co., Boston.
- Old English and American Games (55 pp.). Published by Saul Bros., 626 Federal Street, Chicago, Ill.
- Folk Games and Gymnastic Play (43 pp.). Published by Saul Bros., 626 Federal Street, Chicago, Ill.
- Folk Games of Denmark and Sweden (58 pp.) Published by Saul Bros., 626 Federal Street, Chicago, Ill.
- Folk Dances of Bohemia and Moravia (45 pp.). Published by Saul Bros., 626 Federal Street, Chicago, Ill.

Books which will help the teacher to obtain the best results from organized games:

- Education by Play and Games (234 pp.), by George E. Johnson. Published by Ginn and Co., Boston.
- Play and Recreation for the Open Country (285 pp.), by Henry S. Curtis. Published by Macmillan Co., New York.
- Practical Conduct of Play (330 pp.), by Henry S. Curtis. Published by Macmillan Co., New York.
- Play in Education (500 pp.), by Joseph Lee. Published by Macmillan Co., New York.



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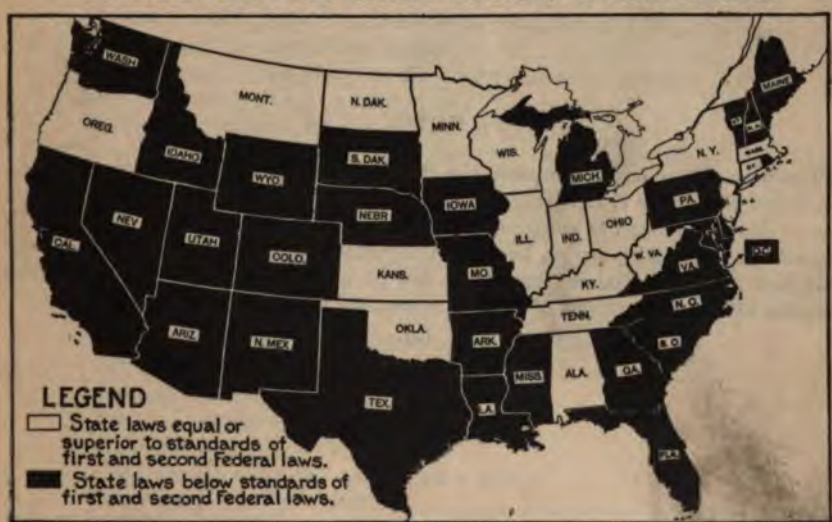
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CHILD LABOR IN THE UNITED STATES

TEN QUESTIONS ANSWERED

COMPARISON OF STATE AND FEDERAL LEGISLATIVE STANDARDS FOR CHILD LABOR IN FACTORIES.



BUREAU PUBLICATION No. 114
(SECOND EDITION)

U. S. DEPARTMENT OF LABOR, CHILDREN'S BUREAU

NOTE.

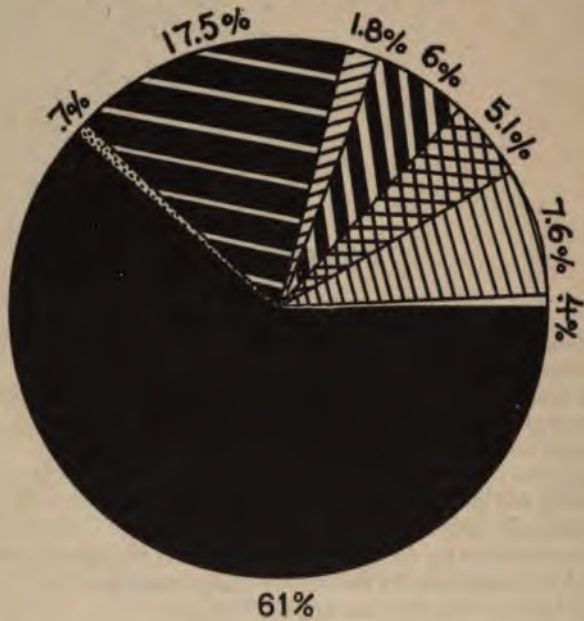
The map on the cover compares the standards of the State child-labor laws in operation December 1, 1923, with those of the first and second Federal child labor laws. No comparison is made of the standards of the State and Federal laws in regard to mines and quarries, because many States having in this regard a lower standard than the Federal laws have few or no mines. For State regulations relative to the employment of boys in mines, see p. 21.









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CHART I. PROPORTION OF CHILDREN 10 TO 15 YEARS OF AGE, INCLUSIVE, IN EACH PRINCIPAL DIVISION OF OCCUPATIONS, 1920.



	Agriculture, forestry, and animal husbandry.....	647,309
	Extraction of minerals.....	7,191
	Manufacturing and mechanical industries.....	185,337
	Transportation.....	18,912
	Trade.....	63,368
	Domestic and personal service.....	54,006
	Clerical occupations.....	80,140
	Other.....	4,595

CHILD LABOR IN THE UNITED STATES.

TEN QUESTIONS ANSWERED.

1. HOW MANY CHILDREN IN THE UNITED STATES ARE AT WORK?

In the United States in 1920 over one million (1,060,858) children 10 to 15 years of age, inclusive, were reported by census enumerators as "engaged in gainful occupations."¹ This number was approximately one-twelfth of the total number (12,502,582) of children of that age in the entire country. The number of child workers 10 to 13 years of age, inclusive, was 378,063. The census does not report the number of working children under 10 years of age, but it is known that such children are employed in large numbers in agriculture, and in smaller numbers in many other occupations such as street trading, domestic service, and industrial home work.

Table I shows the number and proportion of boys and girls reported as gainfully employed in 1920.¹

TABLE I.—*Per cent of children engaged in gainful occupations, by sex: 1920.*¹

Sex.	Children 10 to 15 years of age, inclusive.		
	Total.	Engaged in gainful occupations.	
		Number.	Per cent.
Both sexes.....	12,502,582	1,060,858	8.5
Male.....	6,294,985	714,248	11.3
Female.....	6,207,597	346,610	5.6

¹ Fourteenth Census of the United States, Population, 1920: Occupations of Children, p. 5.

2. IN WHAT OCCUPATIONS ARE CHILDREN ENGAGED?

Of the child workers 10 to 15 years of age, inclusive, in the United States in 1920, 647,309, or 61 per cent, were reported to be employed in agricultural pursuits, the majority (88 per cent) of them as laborers on the home farm. An even larger proportion, 87 per cent, of the working children 10 to 13 years of age, inclusive, were at work in these occupations. There were 185,337 children, or 17.5 per cent of the total number of working children under 16, employed in manufacturing and mechanical industries—cotton, silk, and woolen mills; cigar, clothing, and furniture factories; and canneries and workshops. Over 80,000 children were engaged in some type of clerical occupation; approximately 63,000 were in trade; 54,000, the majority of whom were girls, were working at occupations classified under "domestic and personal service"; and 7,191—almost all of them boys—were employed in the extraction of minerals. Almost 25,000 children 10 to 13 years of age were reported as employed in trade and clerical occupations, over 12,000 in "domestic and personal service," and almost 10,000 in manufacturing occupations.

Table II shows the number and proportion of children in each of the principal occupational groups in 1920 (see also Chart I):

TABLE II.—Occupations of children, by age groups: 1920.¹

Occupation.	Children 10 to 15 years of age, inclusive.		Children 10 to 13 years of age, inclusive.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	1,050,988	100.0	378,068	100.0
Agriculture, forestry, and animal husbandry.....	647,309	61.0	328,988	87.0
Farm laborers (home farm).....	569,834	53.7	301,987	79.9
Farm laborers (working out).....	63,980	6.0	28,089	6.1
Extraction of minerals.....	7,191	.7	647	.2
Manufacturing and mechanical industries.....	185,337	17.5	9,473	2.5
Transportation.....	18,912	1.8	1,899	.5
Trade.....	63,368	6.0	17,213	4.6
Public service (not elsewhere classified).....	1,130	.1	158	(*)
Professional service.....	3,465	.3	621	.2
Domestic and personal service.....	54,006	5.1	12,173	3.2
Clerical occupations.....	80,140	7.6	6,927	1.8

¹ Fourteenth Census of the United States, Population, 1920: Occupations of Children, p. 9; Occupations, Age of Occupied Persons, p. 378.

² Less than one-tenth of 1 per cent.

3. IN WHAT SECTIONS OF THE COUNTRY ARE THE LARGEST NUMBERS OF CHILDREN AT WORK?

Child labor, as Table III indicates, is confined to no one section of the country. According to the 1920 census the proportion of the total child population 10 to 15 years of age, inclusive, "employed in gainful occupations" ranged from 3 per cent in the three Pacific Coast States to 17 per cent in the East South Central States, comprising Kentucky, Tennessee, Alabama, and Mississippi. In Mississippi more than one-fourth of all the children 10 to 15 years of age were at work; in Alabama and in South Carolina, 24 per cent; in Georgia, 21 per cent; and in Arkansas, 19 per cent. Of the New England States, Rhode Island had the largest proportion of children from 10 to 15 years of age, 13 per cent, "employed in gainful occupations." Except in the South no other State has so large a percentage of employed children as this. When all occupations are taken into account the proportion of children at work is much larger in the South than in any other section of the country; but when nonagricultural occupations alone are considered the proportion is considerably larger for New England and for the Middle Atlantic States, and slightly larger for the East North Central States—Ohio, Indiana, Illinois, Michigan, Wisconsin—than for any one of the three southern geographic divisions.

Among cities with 100,000 or more inhabitants the following have 10 per cent or more of their child population 10 to 15 years of age, inclusive, at work: Fall River (18 per cent); New Bedford (17 per cent); Reading (13 per cent); Atlanta, Providence, and Paterson (12 per cent); Trenton (11 per cent); New Orleans, Milwaukee, and St. Louis (10 per cent).

TABLE III.—Per cent of children engaged in gainful occupations, by States: 1920.¹

Division and State.	Children 10 to 15 years of age, inclusive.						
	Total.	Engaged in gainful occupations.					
		Number.	Per cent.	Agricultural.		All other.	
				Number.	Per cent.	Number.	Per cent.
United States.....	12,502,582	1,060,858	8.5	647,309	5.2	413,549	3.3
New England.....	768,131	59,239	7.7	3,053	.4	56,186	7.3
Maine.....	82,829	2,585	3.1	823	1.0	1,762	2.1
New Hampshire.....	45,691	1,526	3.3	215	.5	1,311	2.9
Vermont.....	38,679	1,277	3.3	510	1.3	767	2.0
Massachusetts.....	394,026	33,723	8.6	831	.2	32,892	8.3
Rhode Island.....	63,739	8,569	13.4	119	.2	8,450	13.3
Connecticut.....	143,267	11,559	8.1	555	.4	11,004	7.7
Middle Atlantic.....	2,397,736	131,541	5.5	8,922	.4	122,619	5.1
New York.....	1,059,635	49,846	4.7	2,401	.2	47,445	4.5
New Jersey.....	341,185	26,024	7.6	998	.3	25,026	7.3
Pennsylvania.....	996,916	55,671	5.6	5,523	.6	50,148	5.0
East North Central.....	2,312,711	100,801	4.4	23,425	1.0	77,376	3.3
Ohio.....	596,741	18,119	3.0	3,721	.6	14,398	2.4
Indiana.....	323,979	16,911	5.2	4,844	1.5	12,067	3.7
Illinois.....	699,310	36,933	5.3	5,801	.8	31,132	4.5
Michigan.....	384,213	13,154	3.4	3,588	.9	9,566	2.5
Wisconsin.....	308,468	15,684	5.1	5,471	1.8	10,213	3.3
West North Central.....	1,477,363	57,906	3.9	29,722	2.0	28,184	1.9
Minnesota.....	277,528	8,271	3.0	4,698	1.7	3,573	1.3
Iowa.....	270,217	9,121	3.4	4,184	1.5	4,937	1.8
Missouri.....	395,682	22,587	5.7	9,622	2.4	12,965	3.3
North Dakota.....	87,883	2,316	2.6	2,364	2.7	452	.5
South Dakota.....	78,427	2,555	3.3	1,928	2.5	627	.8
Nebraska.....	155,920	5,286	3.4	3,171	2.0	2,115	1.4
Kansas.....	211,706	7,270	3.4	3,755	1.8	3,515	1.7
South Atlantic.....	1,911,574	273,981	14.3	214,906	11.2	59,075	3.1
Delaware.....	23,909	1,406	5.9	393	1.7	1,013	4.3
Maryland.....	164,546	12,300	7.5	3,168	1.9	9,132	5.5
District of Columbia.....	35,230	1,871	5.3	5	(²)	1,866	5.3
Virginia.....	311,915	25,493	8.2	15,501	5.0	9,992	3.2
West Virginia.....	191,299	7,431	3.9	4,112	2.1	3,319	1.7
North Carolina.....	373,484	62,162	16.6	50,582	13.5	11,580	3.1
South Carolina.....	260,204	63,520	24.4	56,920	21.9	6,600	2.5
Georgia.....	427,235	88,934	20.8	77,105	18.0	11,829	2.8
Florida.....	123,852	10,864	8.8	7,120	5.7	3,744	3.0
East South Central.....	1,267,275	221,342	17.5	196,620	15.5	24,722	2.0
Kentucky.....	318,408	26,754	8.4	21,036	6.6	5,718	1.8
Tennessee.....	323,548	39,837	12.3	32,326	10.0	7,511	2.3
Alabama.....	349,537	84,397	24.1	77,395	22.1	7,002	2.0
Mississippi.....	275,782	70,354	25.5	65,893	23.9	4,461	1.6
West South Central.....	1,449,764	184,267	12.7	158,187	10.9	26,080	1.8
Arkansas.....	259,593	48,140	18.5	45,686	17.6	2,454	.9
Louisiana.....	258,052	32,274	12.5	23,718	9.2	8,556	3.3
Oklahoma.....	289,533	22,981	7.9	19,752	6.8	3,229	1.1
Texas.....	642,586	80,872	12.6	69,031	10.7	11,841	1.8
Mountain.....	393,563	15,612	4.0	8,950	2.3	6,662	1.7
Montana.....	60,045	1,402	2.3	678	1.1	724	1.2
Idaho.....	54,641	1,608	2.9	1,092	2.0	516	.9
Wyoming.....	20,387	608	3.0	307	1.5	301	1.5
Colorado.....	104,790	4,558	4.3	1,955	1.9	2,603	2.5
New Mexico.....	48,032	2,195	4.6	1,418	3.0	777	1.6
Arizona.....	38,278	2,711	7.1	1,981	5.2	730	1.9
Utah.....	60,675	2,361	3.9	1,477	2.4	884	1.5
Nevada.....	6,715	169	2.5	42	.6	127	1.9
Pacific.....	524,465	16,169	3.1	3,524	.7	12,645	2.4
Washington.....	138,645	4,650	3.4	1,024	.7	3,626	2.6
Oregon.....	81,500	2,462	3.0	668	.8	1,794	2.2
California.....	304,320	9,057	3.0	1,832	.6	7,225	2.4

¹ Compiled from Fourteenth Census of the United States, Population, 1920: Occupations of Children.² Less than one-tenth of 1 per cent.

4. IS THE NUMBER OF CHILDREN AT WORK DECREASING?

Once in every 10 years the United States Census Bureau reports on the number of working children 10 to 15 years of age, inclusive. No complete count of employed children is made between these censuses. The most recent decennial census was taken in January, 1920, at the beginning of a period of industrial depression and at a season of the year when employment in many occupations, especially in agriculture, was at its lowest ebb. Moreover, in 1920, the employment of children was discouraged by a Federal child-labor law.¹ Since the census of 1920 was taken this law has been declared unconstitutional, the industrial depression has been succeeded by a period of increasing employment, and were a census to be taken at the present time it would doubtless show a notably larger number of employed children than that of January, 1920.

The census of 1920 records a considerable decrease since 1910 in the number of children reported at work. Although the total child population 10 to 15 years of age, inclusive, increased 15.5 per cent during this period, the number of working children reported decreased almost half (46.7 per cent). A corresponding decrease took place in the proportion of all children of these ages who are employed in gainful occupations, from 18.4 per cent in 1910 to 8.5 per cent in 1920. As shown by Table IV, the decline is most striking in connection with agricultural pursuits, in which the number of children employed decreased 54.8 per cent.

TABLE IV.—Relative changes in numbers of children and of all persons 10 years of age and over employed, 1910 to 1920, by occupation and age.²

Occupation.	Per cent of increase or decrease, 1910-1920.		
	All persons 10 years of age and over.	Children 10 to 15 years of age, inclusive.	Children 10 to 13 years of age, inclusive.
Total population.....	+15.6	+15.5	+18.4
Total gainfully employed.....	+9.0	-46.7	-57.8
Agriculture, forestry, and animal husbandry.....	-13.5	-54.8	-58.9
Farm laborers (home farm).....	-44.1	-50.8	-55.1
Farm laborers (working out).....	-22.1	-75.4	-81.1
Nonagricultural pursuits.....	+20.2	-25.9	-48.8
Extraction of minerals.....	+13.0	-60.2	-72.6
Manufacturing and mechanical industries.....	+20.6	-29.0	-71.1
Transportation.....	+16.2	-9.1	-20.1
Trade.....	+17.4	-10.4	-1.7
Public service (not elsewhere classified).....	+67.8	+110.4	+142.9
Professional service.....	+26.6	-2.8	+7.4
Domestic and personal service.....	-9.7	-51.9	-62.7
Clerical occupations.....	+80.0	+12.9	-4.6

¹ The Federal child labor tax law was effective from Apr. 25, 1919, to May 15, 1922.

² Compiled from Fourteenth Census of the United States, Population, 1920: Occupations of Children, p. 12; Occupations, Age of Occupied Persons, p. 378; Thirteenth Census of the United States, Vol. IV, Population, 1910, Occupation Statistics, p. 302.

5. IS THE DECREASE BETWEEN 1910 AND 1920 REAL OR APPARENT?

According to the United States Census Bureau, a large part of the decrease in the number of children reported in 1920 as employed is apparent rather than real. This is due primarily to a change in the census date from April 15 in 1910 to January 1 in 1920, a circumstance which largely explains the smaller number of children reported in 1920 as engaged in farm work and other seasonal occupations in which fewer children are employed in January than in the spring. Since by far the greater part (84.5 per cent) of the decline in the number of children reported at work in all occupations is due to the large decrease (54.8 per cent) in the number reported as employed in agricultural pursuits, clearly much of the total decrease reported in 1920 can not be regarded as an actual reduction in the total numbers of children gainfully employed. In the nonagricultural occupations,¹ however, much of the decline in the numbers of children reported as employed represents a real decrease, which may safely be attributed to conditions affecting directly and especially the labor of children. Chief among these are the enactment and strengthening of legal regulations, both State and Federal.

Table IV shows a smaller number of employed children in 1920 than in 1910 in each of the principal occupational groups other than the agricultural¹ except two—public service and clerical work, neither of which was affected by the Federal child labor laws—although the total number of employed persons of all ages in each of these occupational groups increased.

¹Child labor in agricultural pursuits was not covered by either of the Federal laws, and has never been subject to State regulation to any appreciable extent. See p. 17.

6. WHAT PROGRESS HAS BEEN MADE IN LEGAL REGULATION DURING THIS PERIOD?

During the decade between 1910 and 1920 Federal regulation of child labor was for the first time in effect. The first Federal child-labor law, enacted on September 1, 1916, to become effective one year after its passage, prohibited the shipment in interstate and foreign commerce of goods produced in mines or quarries in which children under 16 years of age were employed, or in mills, canneries, workshops, factories, or manufacturing establishments in which children under 14 years of age were employed, or in which children between 14 and 16 years of age worked more than eight hours a day or six days a week or between 7 p. m. and 6 a. m. This law was declared unconstitutional by the United States Supreme Court on June 3, 1918. A second Federal law, known as the child labor tax act, was passed in February, 1919, and put a premium on the observance of the same standards by imposing a tax upon the profits of all mines and manufacturing establishments employing children in violation of these standards. Although since declared unconstitutional (on May 15, 1922), this law was in effect at the time of the 1920 census.

While this law may be said to have been an important factor in the decrease which the 1920 census shows, its effectiveness was undoubtedly weakened by the fact that it did not directly prohibit or regulate child labor, but merely tended to discourage it by imposing a tax upon the profits of establishments employing children contrary to the standards set up, and by the fact also that pending the decision of the United States Supreme Court as to the constitutionality of the law the collection of the tax was rendered difficult.

State standards relating to the employment of children were also raised in a number of States during this period. Laws fixing the minimum age for going to work were strengthened in at least one-half of the States, either by raising the age or by increasing the number of occupations to which the law applied, or in both ways. In many States these measures were supplemented and the number of child workers consequently reduced by raising the educational, physical, or other requirements which a child must meet before being permitted to go to work. The number of States fixing a maximum working-day of eight hours for children under 16 in any considerable number of occupations increased from 7 to 28, and the number of those having no prohibition of night work of such children fell from 23 to 7 during the decade. The possibility of adequate enforcement of these various regulations was increased by both legislative and administrative action. Moreover, the standards of

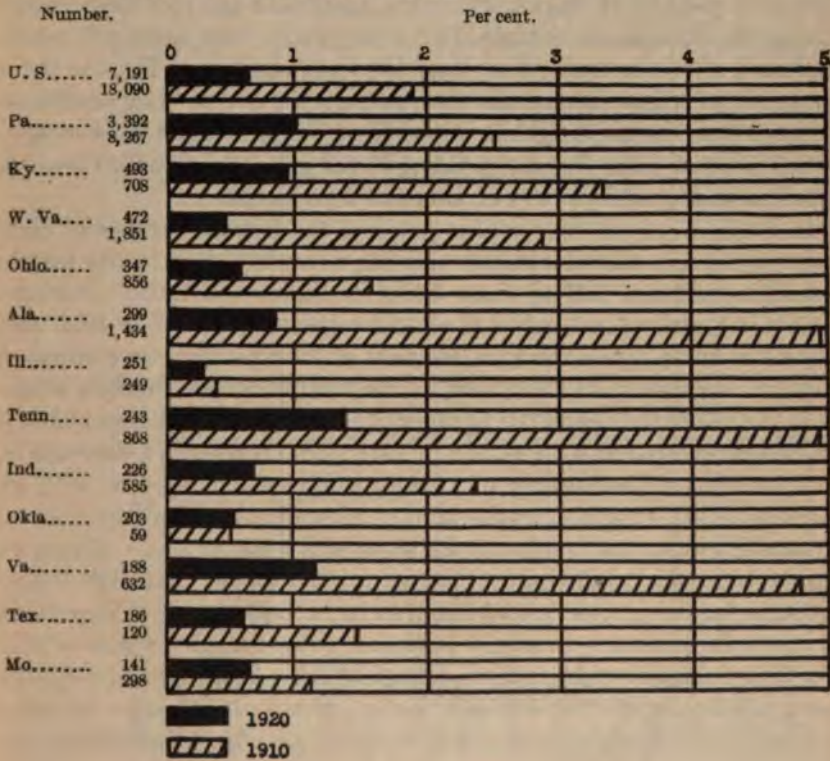
compulsory-education laws were generally raised so that fewer children could leave school for work. Although these laws may not be well enforced in many localities, in 1920 every State at least had such a law, while in 1910 there were seven States without compulsory-education provisions. A new type of legislation, providing for the part-time education of employed children during their working hours, was passed during the decade in 22 States. This legislation undoubtedly had an influence upon the extent of child employment in 1920 in communities where continuation schools had been started, since, as in the case of restrictions of hours, employers are said to be loath to hire persons for whom special arrangements must be made.

LEGISLATION AND CHILD LABOR IN MINES.

According to the census returns the number of children 10 to 15 years of age, inclusive, employed in mining occupations declined 60 per cent in the period 1910-1920, as compared with an increase of 13 per cent in the total number of persons engaged in the industry. During this period not only did Federal regulations become effective, imposing a minimum age of 16 years for the employment of children in and about mines, but in addition all of the principal mining States except two--Illinois and Indiana--raised the minimum legal age for such work to 16. Illinois had had a 16-year age minimum for mining in 1910. Indiana, which had a minimum age of 14 years in both 1910 and 1920, nevertheless showed a decrease in child labor in the mining industry of 61.4 per cent as compared with an increase of 37.1 per cent in the total number of persons employed in mining, apparently a case of the influence of the Federal law in a State with standards lower than the Federal standards.

Chart II shows the proportion of children under 16 in the total number of persons employed in mining occupations in 1910 and 1920 for the 12 States employing the largest number of children in the mining industry.

CHART II. PROPORTION OF CHILDREN BETWEEN 10 AND 16 YEARS OF AGE IN THE TOTAL NUMBER OF PERSONS ENGAGED IN THE MINING INDUSTRIES IN THE UNITED STATES AND IN THE 12 STATES EMPLOYING THE LARGEST NUMBERS OF CHILDREN IN THESE INDUSTRIES, 1910 AND 1920.



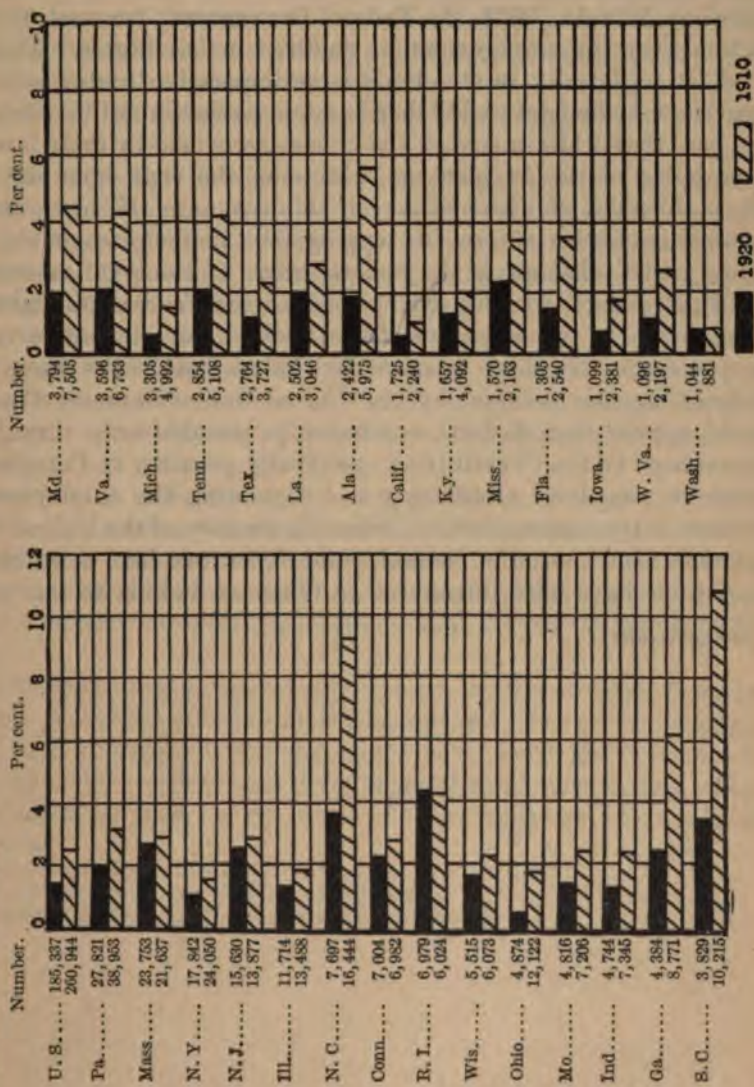
LEGISLATION AND CHILD LABOR IN MILLS AND FACTORIES.

In the manufacturing occupations in which the Federal laws of 1916 and 1918 prescribed a minimum age of 14 years, the influence of child-labor legislation appears to have been almost as important as in the mining industry. Except in five States—Rhode Island, Massachusetts, Connecticut, New Jersey, and Washington—and in the District of Columbia, decreases in child workers, in many cases of from 40 to 60 per cent, were reported for the period 1910–1920. Decreases were generally greatest in States where the minimum age had been raised during the decade, as in Maine (67.8 per cent), Ohio (59.8 per cent), Alabama (59.5 per cent), Maryland (49.4 per cent), and Florida (48.6 per cent); or where the unsatisfactory character of State law or administration had necessitated the issuance of Federal certificates of age, as in Virginia (46.6 per cent), Georgia (50 per cent), North Carolina (53.2 per cent), and South Carolina (62.5 per cent).

In 1920, as at previous census periods, the largest number of children engaged in manufacturing pursuits were employed in the textile industries, almost half of them being in the cotton mills. For the textile industries the number of child workers was 77,967 in 1910 and 54,649 in 1920, representing a decrease of 29.9 per cent as compared with an increase of 75.9 per cent in the total number of textile workers. In the cotton mills the number of children employed was 21,875 in 1920 as compared with 40,572 in 1910; this represents a decrease of 46.1 per cent in the number of working children as compared with an increase of 101.9 per cent in the total number of cotton-mill operatives. Although figures are not yet available to show the numbers of minors employed in the textile industries by States, the fact that little if any decrease in the proportion of children in manufacturing occupations as a whole is reported for the principal cotton-textile States of the North indicates that the decreases in child labor in the cotton industry were principally in the Southern States, where considerable advance was made in child-labor and education laws and where the effect of the Federal laws was especially marked.

Chart III shows the proportion of children in the total number of persons employed in manufacturing and mechanical industries, as reported by the censuses of 1910 and 1920, for the 28 States employing the largest number of children in these industries.

CHART III. PROPORTION OF CHILDREN BETWEEN 10 AND 16 YEARS OF AGE IN THE TOTAL NUMBER OF PERSONS ENGAGED IN MANUFACTURING AND MECHANICAL PURSUITS IN THE 28 STATES EMPLOYING THE LARGEST NUMBERS OF CHILDREN IN THESE INDUSTRIES, 1910 AND 1920.



7. IS CHILD LABOR REGULATED BY THE FEDERAL GOVERNMENT AT THE PRESENT TIME ?

Since the Federal child labor tax law was declared unconstitutional on May 15, 1922, the Federal Government has had no jurisdiction over the employment of children in the States. That the need for uniformity in standards is as imperative to-day as at the time the first Federal child labor law was passed in 1916 is shown by the fact that while many of the States recognize in their laws the desirability of the 14-year age minimum, the eight-hour day, and the prohibition of night work for children, only 18 have as high requirements with respect to employment in factories, mills, canneries, and workshops as the Federal laws,¹ and only 13 measure up in all particulars, without exemptions, to the Federal standards.

Inasmuch as two attempts of the Federal Government to extend its protection to child laborers by indirect measures have been declared unconstitutional by the United States Supreme Court, it would appear that Federal regulation is possible only through an amendment to the Constitution specifically granting to Congress the power to pass laws prohibiting and regulating the employment of children in the various States. Since the decision of the United States Supreme Court on the Federal child labor tax law, a number of resolutions have been introduced in Congress looking to this end.

¹ See map on cover.

8. HOW IS CHILD LABOR REGULATED BY THE STATES AT THE PRESENT TIME?

The child-labor laws of the States set up certain standards—age, educational, and physical, as a rule—which the child must meet before he can be employed in a specified list of occupations. They limit his hours of employment during the first years of his working life, and prohibit him from engaging in certain hazardous employments. The laws are enforced through a work-permit system administered in most States by local school authorities and through inspection of the place of employment by some State agency, usually the department of labor. Moreover, in every State the compulsory school attendance law, if enforced, indirectly regulates the employment of children during school hours.

The failure of the State child-labor laws to prevent the widespread employment of children shown by the census reports is not altogether due to low standards; it is due also to the numerous exemptions permitted by many of the State laws and to inadequate enforcement of the laws.

Owing to the difficulty of presenting clearly a large number of details in chart form, the legal standards for minimum age¹ and for hours of work are shown in the maps which follow only for factories and stores; but the same regulations in many States apply to a considerable number of other occupations, and in a few to any employment.²

Few State laws apply specifically to farm work or domestic service. Although a number of child-labor laws apply to "all gainful occupations," and therefore nominally cover farm work and housework, almost the only regulation of these types of child labor is that which results indirectly from the operation of the compulsory school attendance laws.

¹ Except those for work in mines, which are given separately.

² Usually, however, exempting agricultural pursuits and domestic service.

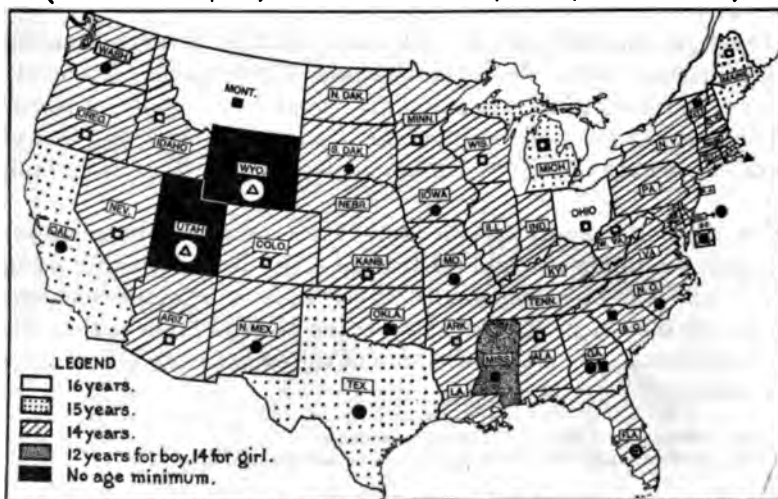
AGE MINIMUM FOR CHILDREN ENTERING EMPLOYMENT.

The nominal age minimum for work in factories in all except three States, and for work in numerous other employments in many other States, is fixed at 14 years or over for both boys and girls. Six States have an age minimum of 15 years or over. This does not mean that in all these States no child under 14, 15, or 16 years of age may go to work, for there are many exemptions permitted by the laws and many limitations upon their application. The most that can be said for a number of States is that the law shows recognition by the legislature of a standard, variation from which is permitted only under certain specified and more or less clearly defined conditions.

MINIMUM AGE FOR CHILDREN IN FACTORIES AND STORES.

[Dec. 1, 1923.]**

(Indirect effect of compulsory school attendance and work permit requirements not noted.)



- With exemptions which are limited to outside school hours.
- With exemptions which are not limited to outside school hours.
- 12 years of age for stores.
- ▲ No age minimum for stores, except restriction imposed during school hours by education law.
- ▲ Certain dangerous or injurious occupations prohibited. In Wyoming, no child whose attendance at school is required by law may be employed in factories or stores during school hours.
- ▲ After Sept. 1, 1924, 15 during school hours.
- * Canneries and other establishments handling perishable products are not included.
- ** 1923 legislation included in so far as available Dec. 1, 1923.

EDUCATIONAL REQUIREMENTS FOR CHILDREN ENTERING EMPLOYMENT.

One of the primary reasons for restrictions upon child labor is that every child may have the education necessary for the citizens of a republic. An educational standard for going to work serves to insist upon this opportunity for those children who have not secured a minimum of education even though they have reached the age at which the law permits them to work.

Only 13 States require completion of at least the eighth grade for the issuance of regular employment certificates; and 7 of these 13 permit exemptions under certain conditions. The laws of 18 States and the District of Columbia either have no educational requirement at all,¹ or fix no definite grade standard; they demand only that before going to work the child must be able to read and write (usually in English) and, in some States, that he have a knowledge of elementary arithmetic.

¹ One of these States, however, requires attendance at school for a specified period during the year preceding employment.

EDUCATIONAL STANDARDS FOR CHILDREN GOING TO WORK.

[Dec. 1, 1923.]

(Including only grade requirement for regular employment certificates)



- * Some of these states require proficiency in certain subjects or specified school attendance in preceding year.
- △ 8th grade for child 14 to 15; 6th for child 15 to 16.
- Completion of designated grade in specified subjects. (In Connecticut local school authorities may raise requirements.)
- Where continuation schools are established, 8th grade for child 14 to 15, no grade requirement for child 15 or over; in other places, no grade requirement.
- With exemptions.
- ▲ In Wilmington, by ruling of board of education; in rest of State, indirectly through compulsory education law.
- ◆◆ 1923 legislation included in so far as available Dec. 1, 1923.

PHYSICAL EXAMINATIONS OF CHILDREN ENTERING EMPLOYMENT.

The importance of physical examinations at regular intervals is becoming more and more generally recognized. Such examinations are particularly important in the case of children under 18 years of age who go to work. During the years from about 12 to maturity the child's body undergoes rapid growth and change, and if he is obliged through this period to adjust himself to the new demands of occupational life he is subjected to a double mental and physical strain. All except 19 States have recognized the need for protection by making some legal provision in regard to the child's physical ability to go to work, but only 22 (2 of these with certain exemptions) have made an examination by a physician mandatory before a child may receive a regular employment certificate. Seven other States and the District of Columbia authorize the requirement of an examination at the discretion of the certificate-issuing officer.

LEGAL REQUIREMENTS FOR PHYSICAL EXAMINATIONS* OF CHILDREN GOING TO WORK. [Dec. 1, 1923]**

(Examinations to determine age are not included)



- * Required for issuance of regular employment certificates.
- The law does not specifically demand an employment certificate, but if obtained it is prima facie evidence that child is of legal age for employment.
- ⊕ Examination mandatory in Milwaukee by order of Industrial Commission.
- ⊖ Exemptions in certain cases on written objection of parent.
- ⚡ Examination within one year previous by school medical officer may be accepted as substitute.
- ◆ 1923 legislation included in so far as available Dec. 1, 1923.

AGE MINIMUM FOR WORK IN MINES.

Most State laws prohibit children under specified ages from engaging in certain hazardous or unhealthful occupations, and a number give to a State board power to determine from time to time what occupations are dangerous or injurious and to prohibit children from working in such occupations. An employment generally recognized and regulated as hazardous is mining. Twenty-eight States, including most of those in which mining is an important industry,¹ prohibit the employment of boys in mines before the age of 16,² and four States have a still higher minimum age. Many States prohibit entirely the employment of girls or women in this industry, but, since women and girls usually have not been employed in mines in the United States, the laws on this point are not important.

¹ See Chart II, p. 13.

² Two of these States permit exemptions.

MINIMUM AGE FOR BOYS IN MINES.

[Dec. 1, 1923]**

(Indirect effect of compulsory school attendance requirements not noted)



- With exemptions
 - By ruling of Board of Inspectors of Child Labor
 - ▲ Mines not specifically named, but child labor law, with minimum age of 14 (15 during school hours after Sept. 1, 1924) in manufacturing or business establishments, applies to all employers of children "whatever the business conducted" (except agricultural pursuits and domestic service).
 - △ By implication from employment certificate law, minimum age would be 14.
- ** 1923 legislation included so far as available Dec. 1, 1923.

THE LENGTH OF THE WORKING-DAY.

Thirty-five States and the District of Columbia have recognized the principle of an eight-hour day for child workers¹ by fixing this standard for the work of children of certain ages in at least one industry; 30 States and the District of Columbia have an eight-hour day which applies to children up to 16 years of age in both factories and stores,¹ 4 of these allowing certain exemptions. In some of these States the eight-hour day covers work in many other employments, sometimes in all "gainful occupations." This prohibition may also apply to girls, or to children of both sexes, up to 18 years of age; and in a few instances it applies to all females. Eight States still permit children between 14 and 16 years of age to work from 10 to 11 hours a day, and 1 does not in any way regulate the length of its working-day.

¹ One other State, Montana, prohibits altogether the work of children under 16 in factories.

DAILY HOURS FOR CHILDREN UNDER 16¹ IN FACTORIES AND STORES.

[Dec. 1, 1925.]

(Canneries and other establishments handling perishable products are not included.)



- * Laws regulating hours of labor of females or of all employees in certain occupations are omitted.
 † Classified here because no child under 16 may be employed at any time in factories.
 ‡ Law does not extend to 16 years of age (Mississippi—boy 14 to 16 in cotton and knitting mills exempted; Texas—child 15 to 16 not covered by law; Utah—boy 14 to 16 not covered by law).
 § With exceptions. In Maine, exemption limited to employers engaged in public service in certain cases of emergency.
 ¶ No provisions for stores. (But in North Carolina for child under 14, 8-hour day in factories and stores.)
 ** 1923 legislation included in so far as available Dec. 1, 1925.

WEEKLY HOURS FOR WORKING CHILDREN.

The 48-hour week is nearly always prescribed in States which require the 8-hour day; one of these, Virginia, has a 44-hour week. Twenty-nine States and the District of Columbia have a 48-hour week¹ applying to children up to 16 years of age in factories and stores; this provision also applies in some States to girls up to 21 or to all children up to 18 years of age, and in a few States to all females.

¹ Four of these permit exemptions. One other State, Montana, prohibits altogether the work of children under 16 in factories.

WEEKLY HOURS FOR CHILDREN UNDER 16^{*} IN FACTORIES AND STORES.
[Dec. 1, 1923]**

(Canneries and other establishments handling perishable products are not included.)



- * Laws regulating hours of labor of females or of all employees in certain occupations are omitted.
 † Classified here because no child under 16 may be employed at any time in factories.
 ‡ Law does not extend to 16 years of age (Mississippi—boy 14 to 16 in cotton and knitting mills exempted; Texas—child 15 to 16 not covered by law; Utah—boy 14 to 16 not covered by law).
 ▲ Provision for 54-hour week in factories does not apply to boys.
 ● With exemptions.
 ○ No provisions for stores.
 ** 1923 legislation included in so far as available Dec. 1, 1923.

PROHIBITION OF NIGHT WORK FOR CHILDREN.

The need for protection of children from the physical and moral dangers of employment at night has received fuller recognition in our State laws than the need for hour regulations, but nevertheless four States have not yet provided this protection.¹ Thirty-five States and the District of Columbia prohibit children up to 16 years of age from engaging in night work in factories and stores,² the provision often extending to a number of other employments, and even to all gainful work. In some States this prohibition applies to minors up to 18 years of age, and in some to all females.

¹ One of these, South Dakota, prohibits night work in mercantile establishments for children under 14. One other State, Montana, has no night-work prohibition, but prohibits altogether the work of children under 16 in factories.

² Six of these permit exemptions.

LEGAL PROHIBITIONS OF NIGHT WORK FOR CHILDREN UNDER SIXTEEN IN FACTORIES AND STORES. [Dec. 1, 1923]

(Canneries and other establishments handling perishable products are not included)



● With exemptions. (In Maine, exemption limited to employers engaged in public service in certain cases of emergency.)

⊙ Employment of child under 16 in factories entirely prohibited.

⊙ Work permitted later than 7 p.m. (until 8 p.m. - Colorado, Florida, Nebraska, Pennsylvania, Rhode Island, South Carolina (8 p.m. to make up time lost on account of accident to machinery); until 9 p.m. - Idaho, New Mexico, North Carolina; until 10 p.m. - California, in stores.)

△ Prohibition extends from 8 p.m. to 8 a.m. for factories; 8 p.m. to 8 a.m. for stores.

⊞ Employment of all females in stores after 10 p.m. prohibited.

△ Children under 14 prohibited from work in mercantile establishments after 7 p.m.

©-© 1923 legislation included as far as available Dec. 1, 1923.

STATE REGULATION OF CHILD LABOR IN STREET TRADES.

Fourteen States and the District of Columbia have laws requiring children selling papers or doing other work on the street to secure permits or badges. Only 10 have state-wide laws affecting boys engaged in independent street work. These laws have proved much more difficult to enforce than those regulating child labor in factories, stores, and other establishments. Although child labor in street trades may be controlled by local ordinances or police regulations and is so controlled in some places, State law is necessary in order that minimum protection may be effective throughout the State.

STATE LAWS REGULATING THE WORK OF BOYS IN STREET TRADES*

[Dec. 1, 1923]**

(Only specific street trades laws included.)



- * This does not include: (1) provisions applying to route carriers; (2) city ordinances; (3) delinquency and dependency laws sometimes applying to street workers; (4) laws relating to messengers and delivery boys.
 ○ Minimum age 10 in cities; state-wide child labor law provides for "license" 10-14.
 ● Minimum age 10; regulated to 16. In New Jersey, "Age and working certificate"; provided in child labor law, is used for street trades.
 ■ Minimum age 11, with exemptions; regulated to 16.
 ▲ Minimum age 12; regulated to 16. In Delaware; provisional permit provided for in child labor law is used for street trades; State law, applicable to Wilmington only, requires badges.
 ⊕ Minimum age 12.
 ⊙ Minimum age 14; regulated to 16.
 ⊛ Minimum age 12; regulated to 17.
 ⊕ Minimum age 10.
- ** 1923 legislation included so far as available Dec. 1, 1923.

COMPULSORY SCHOOL ATTENDANCE.

Every State now has a compulsory-school-attendance law, statewide in application; but in 2 States, Mississippi and Virginia, particular localities may obtain exemptions under certain specified conditions. In 27 States attendance is required throughout the State up to the age of 16, and in 13 the upper age limit is 17 or 18, at least in some localities. The school law in most States allows children above a certain age (usually 14) to be excused to go to work, and many other exemptions are permitted which weaken the effect of the compulsory school attendance provisions. Only 2 States, Ohio and Oklahoma, require full-time schooling up to the age of 16 for all children.

COMPULSORY DAY SCHOOL ATTENDANCE LAWS AFFECTING THE EMPLOYMENT OF CHILDREN.

[Dec. 1, 1923]**



- ∪ Provisions exempting children because of physical or mental incapacity, distance from school, or equivalent instruction, not included.
- With exemptions.
 - † No exemptions under 16, except that in Ohio high school graduate is exempted.
 - ⊕ No exemptions under 15.
 - No exemptions under 14. (This statement applies in Arizona according to continuation school law; in Delaware to Wilmington only; in Kentucky to cities of 1st, 2nd, 3rd, or 4th class only; in Washington only where continuation schools are established.)
 - Law applies up to the specified age, "inclusive."
 - To 16 in parish of Orleans; to 14, "inclusive," elsewhere.
 - ▲ To 17 outside Baltimore; to 16 in Baltimore.
 - To 17 outside Wilmington; to 16 in Wilmington.
 - ** 1923 legislation included so far as available Dec. 1, 1923.

COMPULSORY PART-TIME SCHOOL ATTENDANCE.

The recognition of the need for providing further educational opportunities for children who have left the regular day schools and entered industrial life at an early age is shown by the passage, within the past few years, of laws requiring employed children between 14 and 16 years of age, and in some States up to 18 years of age, to attend part-time continuation schools.

Twenty-six States now have laws of this type, but only 20 of these have provisions requiring schools to be established under certain specified conditions. The attendance required in most States varies from four to eight hours weekly, to be counted as part of the child's legal working hours.

COMPULSORY PART-TIME SCHOOL ATTENDANCE LAWS*
AFFECTING EMPLOYED CHILDREN.
 [Dec. 1, 1923]**



- * Evening school laws not included. Exemptions not noted.
 † Establishment compulsory under certain specified conditions.
 ● Attendance required up to 16 years of age.
 ○ Attendance required up to 17 years of age.
 ◎ Attendance required up to 18 years of age (in Mo. penalty applies only up to 16; in Ill. attendance required up to 17 beginning Sept. 1, 1923, to 18 beginning Sept. 1, 1925).
 ▲ Evening school attendance accepted as substitute.
 ** 1923 legislation included so far as available Dec. 1, 1923.

9. WHAT ARE THE MINIMUM STANDARDS FOR CHILDREN ENTERING EMPLOYMENT?

Minimum standards for children entering employment adopted at the Washington and Regional Conferences on Child Welfare called by the Children's Bureau in 1919 are as follows:

Age minimum.

An age minimum of 16 for employment in any occupation, except that children between 14 and 16 may be employed in agriculture and domestic service during vacation periods until schools are continuous throughout the year.

An age minimum of 18 for employment in and about mines and quarries.

An age minimum of 21 for girls employed as messengers for telegraph and messenger companies.

An age minimum of 21 for employment in the special-delivery service of the U. S. Post Office Department.

Prohibition of the employment of minors in dangerous, unhealthy, or hazardous occupations or at any work which will retard their proper physical or moral development.

Educational minimum.

All children between 7 and 16 years of age shall be required to attend school for at least nine months each year.

Children between 16 and 18 years of age who have completed the eighth but not the high-school grade and are legally and regularly employed shall be required to attend day continuation schools at least eight hours a week.

Children between 16 and 18 who have not completed the eighth grade or children who have completed the eighth grade and are not regularly employed shall attend full-time school. Occupational training especially adapted to their needs shall be provided for those children who are unable because of mental subnormality to profit by ordinary school instruction.

Vacation schools placing special emphasis on healthful play and leisure time activities shall be provided for all children.

Physical minimum.

A child shall not be allowed to go to work until he has had a physical examination by a public-school physician or other medical officer especially appointed for that purpose by the agency charged with the enforcement of the law, and has been found to be of normal development for a child of his age and physically fit for the work at which he is to be employed.

There shall be annual physical examinations of all working children who are under 18 years of age.

Hours of employment.

No minor shall be employed more than 8 hours a day or 44 hours a week. The maximum working day for children between 16 and 18 shall be shorter than the legal working day for adults.

The hours spent at continuation schools by children under 18 years of age shall be counted as part of the working day.

Night work for minors shall be prohibited between 6 p. m. and 7 a. m.

Minimum wage.

Minors at work shall be paid at a rate of wages which for full-time work shall yield not less than the minimum essential for the "necessary cost of proper living, as determined by a minimum wage commission or other similar official board." During

a period of learning they may be rated as learners and paid accordingly. The length of the learning period should be fixed by such commission or other similar official board, on educational principles only.

Placement and employment supervision.

There shall be a central agency which shall deal with all juvenile employment problems. Adequate provision shall be made for advising children when they leave school of the employment opportunities open to them, for assisting them in finding suitable work, and providing for them such supervision as may be needed during the first few years of their employment. All agencies working toward these ends shall be coordinated through the central agency.

ADMINISTRATION.

Employment certificates.

Provision shall be made for issuing employment certificates to all children entering employment who are under 18 years of age.

An employment certificate shall not be issued to the child until the issuing officer has received, approved, and filed the following:

1. A birth certificate, or, if unobtainable, other reliable documentary proof of the child's age.
2. Satisfactory evidence that the child has completed the eighth grade.
3. A certificate of physical fitness signed by a public-school physician or other medical officer especially appointed for that purpose by the agency charged with the enforcement of the law. This certificate shall state that the minor has been thoroughly examined by the physician and that he is physically qualified for the employment contemplated.

4. Promise of employment.

The certificate shall be issued to the employer and shall be returned by the employer to the issuing officer when the child leaves his employment.

The school last attended, the compulsory-education department, and the continuation school shall be kept informed by the issuing officers of certificates issued or refused and of unemployed children for whom certificates have been issued.

Minors over 18 years of age shall be required to present evidence of age before being permitted to work in occupations in which the entrance ages or hours are especially regulated.

Record forms shall be standardized and the issuing of employment certificates shall be under State supervision.

Reports shall be made to the factory inspection department of all certificates issued and refused.

Compulsory-attendance laws.

Full-time attendance officers adequately proportioned to the school population shall be provided in cities, towns, and counties to enforce the school-attendance law.

The enforcement of school-attendance laws by city, town, or county school authorities shall be under State supervision.

Factory inspection and physical examination of employed minors.

Inspection for the enforcement of all child-labor laws, including those regulating the employment of children in mines or quarries, shall be under one and the same department. The number of inspectors shall be sufficient to insure semiannual inspections of all establishments in which children are employed, and such special inspections and investigations as are necessary to insure the protection of the children.

Provision should be made for a staff of physicians adequate to examine annually all employed children under 18 years of age.

10. WHAT IS THE UNITED STATES CHILDREN'S BUREAU PUBLISHING ON THE SUBJECT OF CHILD LABOR?

- Administration of Child-Labor Laws, Part 5: Standards applicable to the administration of employment-certificate systems. (In press.)
- Administration of the First Federal Child-Labor Law. Publication No. 78.
- Advising Children in their Choice of Occupation and Supervising the Working Child. Publication No. 53.
- Annual Reports of the Chief of the Children's Bureau (not available for distribution, but can be found in a number of libraries).
- Child Labor—Outlines for Study. Publication No. 93. This publication presents the outstanding features of the child-labor problem arranged in study outline form, and gives reading references.
- Child Labor and the Welfare of Children in an Anthracite Coal-Mining District. Publication No. 106.
- Child Labor and the Work of Mothers in the Beet Fields of Colorado and Michigan. Publication No. 115.
- Child Labor and the Work of Mothers in Oyster and Shrimp Canning Communities on the Gulf Coast. Publication No. 98.
- Child Labor and the Work of Mothers on Norfolk Truck Farms. (In press.)
- Child Labor in North Dakota. Publication No. 129.
- Child Labor in Representative Tobacco-Growing Areas. (In preparation.)
- Child Labor in Rural Illinois. (In preparation.)
- Child Labor on Maryland Truck Farms. Publication No. 123.
- The Welfare of Children in Cotton-Growing Areas of Texas. (In press.)
- Children in Street Trades. (In preparation.)
- Every Child in School. Publication No. 64.
- Industrial Accidents to Minors in Wisconsin, Massachusetts, and New Jersey. (In preparation.)
- Industrial Home Work of Children: A study made in Providence, Pawtucket, and Central Falls, Rhode Island. Publication No. 100.
- Industrial Instability of Child Workers: A study of employment certificate records in Connecticut. Publication No. 74.
- List of References on Child Labor. Publication No. 18.
- Minimum Standards for Child Welfare. Publication No. 62. (Contains only standards adopted by the Conference on Child Welfare, the proceedings of which are contained in Children's Bureau Publication No. 60.)
- Minimum-Wage Rulings Affecting Minors. (In preparation.)
- Minors in Automobile and Metal-Manufacturing Industries in Michigan. Publication No. 126.

Physical Standards for Working Children. Preliminary report of committee appointed by the Children's Bureau of the U. S. Department of Labor to formulate standards of normal development and sound health for the use of physicians in examining children entering employment and children at work. Publication No. 79.

Scholarships for Children. Publication No. 51.

Standards and Problems Connected with the Issuance of Employment Certificates: Proceedings of the Conference held under the Auspices of the U. S. Children's Bureau and the National Education Association at Boston, Massachusetts, July 5-6, 1922. Publication No. 116.

Standards of Child Welfare. Separate No. 2, Child Labor. Reprint from Conference Series No. 1, Bureau Publication No. 60. (A report of the Washington and regional conferences on child welfare called by the Children's Bureau in 1919.)

The Employment-Certificate System: A safeguard for the working child (revised). Publication No. 56.

The Welfare of Children in Bituminous Coal Mining Communities in West Virginia. Publication No. 117.

The Working Children of Boston: A study of child labor under a modern system of legal regulation. Publication No. 89.

Unemployment and Child Welfare: A study made in a middle western and an eastern city during the industrial depression of 1921 and 1922. Publication No. 125.

Vocational Guidance and Juvenile Placement (in cooperation with the Junior Division of the U. S. Employment Service). (In preparation.)

Work of Children on Truck and Fruit Farms of Washington and Oregon. (In preparation.)

Work of Children on Truck and Small-Fruit Farms in Southern New Jersey. (In press.)

Work Opportunities for Minors of Subnormal Mentality. (In preparation.)

Legal charts:

No. 1. State Child-Labor Standards, January 1, 1921. (With addenda covering more recent laws.)

No. 2. State Compulsory School Attendance Standards Affecting the Employment of Minors, January 1, 1921. (With addenda covering more recent laws.)

Leaflets:

Canal-Boat Children.

Standards Applicable to Child Labor.

Trend of Child Labor in the United States, 1913-1920.

Trend of Child Labor in the United States, 1920-1923.

Working Children of Boston. (A leaflet summarizing the report published in full as Publication No. 89.)

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U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

CHILDREN'S BUREAU

GRACE ABBOTT, Chief

CHILD LABOR AND THE WORK OF
MOTHERS IN THE BEET FIELDS
OF COLORADO AND MICHIGAN

9

Bureau Publication No. 115



WASHINGTON
GOVERNMENT PRINTING OFFICE

1923



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LETTER OF TRANSMITTAL

UNITED STATES DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, July 18, 1922.

SIR: I transmit herewith a report entitled "Child Labor and the Work of Mothers in the Beet Fields of Colorado and Michigan."

The investigation was planned and carried on under the direction of Ellen Nathalie Matthews, director of the industrial division of the bureau. Dr. Gertrude A. Light made physical examinations of children in the Colorado beet-field region and analyzed the findings with reference to health.

It is a pleasure to acknowledge the cooperation given by the beet-sugar companies and by local school officials in both Colorado and Michigan. Among the latter, special mention should be made of the assistance given by the commissioner of schools of Saginaw County, Mich., Mrs. Evangeline G. Tefft, in the supplementary study of the effect of beet-field work upon school attendance.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

HON. JAMES J. DAVIS,
Secretary of Labor.



TWO FAMILIES OF BEET-FIELD WORKERS.

All three boys and the oldest girl worked; the other children spent the day in the fields with their mothers.

CHILD LABOR AND THE WORK OF MOTHERS IN THE BEET FIELDS OF COLORADO AND MICHIGAN.

INTRODUCTION.

THE SUGAR-BEET CROP AND ITS HAND WORKERS.

The beet-sugar industry in the United States is of comparatively recent development; but its growth during the last 20 or 25 years has been so rapid that its importance both as a manufacturing and an agricultural industry is fully established. In 1896 there were but 7 factories in the country, producing 37,536 tons of beet sugar; 10 years later the number of factories had increased to 63 and the sugar tonnage to 483,612.¹ In 1920 there were 98 factories with a total output of 1,090,021 tons.²

The increase in sugar-beet acreage has kept pace with the growth in the manufacture of beet sugar. In 1920, 872,376 acres of beets were harvested³, an increase of almost 700 per cent over the acreage in 1899.⁴

Beet-growing areas are located all the way from Ohio to California, but are concentrated in three sections: The middle western, of which the most important States are Michigan, Ohio and Wisconsin; the western mountain section, with Colorado, Utah, and Idaho leading in beet production; and the Pacific coast section in which California is the only important beet-growing State. Table I shows the relative importance of the beet-growing States in 1920.

¹ Letter from the Secretary of Agriculture, Sixty-first Congress, First Session, Senate Document 22, pp. 3, 14.

² U. S. Department of Agriculture, Monthly Crop Reporter, April, 1921, p. 38.

³ *Ibid.*

⁴ Thirteenth Census of the United States, 1910, Vol. V, Agriculture, p. 601. Washington, 1913.

TABLE I.—*Beet-sugar production in the United States, by States.*¹

State.	Sugar produced.		Area harvested.		Beets worked.		Number of factories in operation. ²
	Number tons. ¹	Per cent distribution.	Number acres. ¹	Per cent distribution.	Number tons. ¹	Per cent distribution.	
United States.....	1,090,021	100.0	872,376	100.0	7,999,222	100.0	98
California.....	167,997	15.4	122,813	14.1	1,051,889	13.1	10
Colorado.....	294,482	27.0	219,847	25.2	2,165,737	27.1	17
Idaho.....	57,603	5.3	45,810	5.3	413,178	5.2	9
Michigan.....	165,899	15.2	149,559	17.1	1,243,868	15.5	17
Nebraska.....	89,518	8.2	72,296	8.3	669,666	8.4	5
Ohio.....	47,073	4.3	49,199	5.6	382,273	4.8	5
Utah.....	162,588	14.9	112,567	12.9	1,261,011	15.8	18
Wisconsin.....	20,943	1.9	20,686	2.4	168,854	2.1	5
Other ²	83,918	7.7	79,599	9.1	642,746	8.0	12

¹ U. S. Department of Agriculture, *Monthly Crop Reporter*, April, 1921, p. 38.

² Illinois, Indiana, Iowa, Kansas, Minnesota, Montana, Washington, Wyoming.

Contracts for beet growing are arranged every year between the sugar-manufacturing companies and the farmers in beet-raising localities, and every acre of sugar beets is contracted for before the seed is sown. The farmer with his machinery prepares the ground for planting, seeds the crop, cultivates between the rows, and at harvest time loosens the beet roots from the soil. But the intermediate and subsequent processes are performed by an army of hand workers, for although machinery for certain of these processes is being tried, it is not as yet in general use. As the work is distinctly seasonal and also comes at a time when regular farm labor is busy with other crops, the farmer usually hires labor on contract to do the handwork. These laborers have no more to do with the regular farm work than harvest hands or fruit pickers, though in the intervals between the hand processes they sometimes hire themselves out to the farmers for other work. The amount of hand labor required for the beets is usually estimated at 1 adult worker to every 10 acres, which means that in the United States approximately 87,238 adult laborers or an equivalent working force of adults and children were required in 1920.

A large part of the work is done by children ranging in age from 6 to 16 years. Just how many children are employed in the beet fields is not known.⁵ All contracts are made with the head of the family, usually the father, and as he merely agrees to take care of the work on a given number of acres, no record appears anywhere

⁵ Seventeenth Biennial Report, Colorado Bureau of Labor Statistics, 1919-20, p. 20 (Denver, 1920), contains the following statement:

"An estimate of the number of children working in the beet fields in Colorado was made after conference with Judge Baker of the Weld County court, and a representative of the Great Western Sugar Co., Denver.

"Judge Baker stated that the number of children at work in the Weld County beet fields is about 2,500. The number of children in that county who are put to work in the fields is perhaps larger than in any other part of the State, but 400 children are in the fields for every factory in Colorado * * * which would give the total in the entire State at 6,800, which estimate is probably liberal and for some of the districts it may be high."

of the number or ages of the persons working for him. Although the sugar companies bring in large numbers of laborers to hire out to the farmers and it is possible to secure from the companies the number of families brought in, and in some cases the number of full fares and half fares paid, that information obviously does not show how many children, even of contract laborers, worked.

Although children working in the beet fields are for the most part those of contract laborers, some are the children of land owners or renters who, although they have a fairly large acreage, are not prosperous enough to hire labor, or who have a small beet acreage which they feel can easily be cared for by their own families.

The supply of contract hand laborers comes from two sources. First, there are the families resident near the beet farms. These are usually families that have originally come either from cities or from other rural areas in the United States to work in the beet fields and have remained in the district the year round. In some cases they buy or rent little houses of their own; in others they remain in the "beet shack" supplied them by the sugar company or the farmer, paying a nominal rent, if any, during the winter. Those who are brought in from outside for the work are usually recruited from the foreign quarters of large cities. During the winter the agent of the sugar company visits such localities as are likely to furnish laborers, advertises in their papers, visits local employment agencies, and otherwise gets in touch with the labor supply. Formerly it was possible to recruit from Chicago, Detroit, Toledo, Cleveland, Pittsburgh, and other cities and towns of the Middle West sufficient labor for the Michigan beet fields; and Denver, Pueblo, Trinidad, and some of the Nebraska and Kansas cities or western mining districts supplied labor for the Colorado section. But during the period immediately following the war it was impossible to find enough labor near by, and the labor agents were obliged to go into New Mexico and Texas and to the border of Old Mexico and to draw to a much greater extent upon the great field of Mexican labor. Fort Worth, El Paso, and San Antonio have become important recruiting centers for beet-field laborers, from which whole trainloads of Mexicans are shipped north and east to the beet fields.

The laborer contracts to do the handwork on as many acres as he thinks he and his family group can take care of. The sugar company, or the farmer—if the agreement is made directly with the latter—contracts to pay the laborer a fixed rate per acre, part of the amount to be paid after each operation. In addition, the railroad fares of the workers to the fields where they are to work are paid by the sugar company, and shelter is provided either by the company or by the farmer for whom the laborer is to work.

The first operations turned over to the hand worker are blocking and thinning. It has been found cheaper to be liberal with the seed and plant more than enough than to risk a poor stand, but to obtain the most perfect beets only one plant must be allowed to mature, and the plants should be from 10 to 12 inches apart in the row. Accordingly sections of seedlings are chopped out with a hoe, and only small clumps 10 or 12 inches apart are left. Blocking, as it is called, is usually done by adult laborers⁶ and is followed immediately by thinning, a process performed as a rule by children. It consists in pulling out all but one beet plant and leaving one—preferably the strongest, though usually no great discrimination is shown by the children—to attain maturity. The blocking and thinning must be done before the beet plants grow too large, and the work is usually done under pressure.

As soon as the blocking and thinning are completed hoeing begins. The farmer cultivates with machinery between the rows, but between the individual plants in the rows the ground must be kept free from weeds and the soil stirred about the growing beets, necessitating one, two, and often three, hand hoeings. Where the machine cultivation is neglected the weeds often grow rank and strong and make the hoeing very difficult. There is not, however, the same pressure in hoeing as there is in blocking and thinning and it is always done in a more leisurely way. This is usually the work of the older children or adults.

Between the last hoeing—that is, about the end of July—and the time of harvest an interval of some weeks elapses. The date of beginning the harvest depends upon the sugar content of the beets and is determined by the chemists in the testing stations of the sugar companies. After the beets have been loosened from the soil by a horse-drawn machine known as a lifter, they are pulled up by the hand worker and thrown in piles or rows to be “topped.” For the latter operation a sharp, heavy knife, about 18 inches long, with a hook at the end, is used. The worker, with the knife grasped in the right hand, hooks up the beet and chops off the crown of leaves with a sharp, downward stroke. All leaves must be cut cleanly away and to do this more than one stroke is frequently required. As the beets, though averaging under 3 pounds with the tops, are often too heavy for a child to hold firmly enough to stand the cutting stroke of the knife, many children rest the beet on their knee, standing on one foot while they cut the leaves off or “top” the beet. Where adults and children are working in groups together, the children frequently pull and throw the beets in piles for the adults to top; but if there are more children than are needed for pulling, the larger children top and the smaller ones pull and pile.

⁶ “Adult” throughout this report means a person 16 years of age or over.

While the families are usually brought to the beet fields in April, and occasionally as early as March, the handwork does not begin before May. In order that the whole crop may not be at the same stage of growth at the same time the planting season is extended over a month or more and in consequence different fields are ready for the same operation at different times. Blocking and thinning usually take the laborers about five or six weeks. The hoeing is spread over four or five weeks longer. After it comes an interval of about six weeks in which there is no handwork in the beet fields.

The beet harvest begins about the 1st of October and lasts until about the middle of November, or between six and seven weeks. The beet-field laborers then pack up their belongings and hasten south to the warmer climate of New or Old Mexico or go back to the cities to look for work in some factory or shop; or, if they elect to remain in the beet districts for the winter, they settle down on the earnings of the family in the beet fields or try to secure the scarce jobs in the vicinity.

COMPARISON OF CONDITIONS IN COLORADO AND MICHIGAN.

The present study was made in Weld and Larimer Counties in Colorado, and in Gratiot, Saginaw, and Isabella Counties in Michigan, which were selected as representative of the beet-raising areas in their respective States and sections. Families were selected for study in which at least one child under the age of 16, or the mother if she had a child under 6 years of age, had worked in the beet fields in 1920.

Conditions in the Colorado and the Michigan sections were in general very similar. The great majority of the parents in the families interviewed in both sections were foreign born, though most of the children themselves had been born in the United States. In the Michigan area studied, however, where the beet farms averaged only 5 or 6 acres, a larger number of native American families of English-speaking stock were engaged in the work in their own fields than in Colorado, where the plantings averaged upwards of 20 acres. Almost seven-tenths of the Colorado families were Russian-Germans, and one-tenth were Mexicans; the Michigan workers included a wide range of nationalities, most of them Slavic, in addition to Mexicans. In each section migratory workers had been brought in from more or less distant points to supplement the available resident labor, but practically four-fifths of the Colorado families, as compared with only one-third of those in the Michigan section, resided within a few miles of the beet farms. Some farm owners, tenant farmers, and contract laborers were included in the survey in each area; but largely because of the smaller acreages proportionately

more beet farmers' families in Michigan than in Colorado were doing handwork on their own beet crop.

Tenant farmers and farm owners lived in the ordinary farmhouse of the area, but laborers' families in both Colorado and Michigan occupied any kind of shelter that was available for temporary use—abandoned farmhouses, rude frame or tar-paper shacks, and even tents and caravan wagons—though some of the sugar companies in Michigan had provided one or two room portable cottages for their laborers. The dwellings were in many cases in bad repair, dark, ill ventilated, and far from weatherproof. Overcrowding was extreme. In Colorado 77 per cent and in Michigan 60 per cent of the laborers' families lived with two or more persons per room. Sanitation was poor, and the water supply, especially in the irrigated districts of Colorado, was often neither plentiful nor protected against contamination. Most of the laborers occupied their "beet shacks" for five or six months a year.

In the Colorado section 1,073 children between 6 and 16 years of age and in the Michigan section, 763 had worked in the beet fields in the summer of 1920. A large proportion (from one-fifth to one-fourth) even of the 6- and 7-year-old children in the families interviewed had worked; but the workers constituted a majority—approximately three-fifths—of the 8-year-old children, and practically all of those over the age of 10. One fourth of the working children in each section were under 10, over one-half from 10 to 13, and only one-fifth 14 or 15 years of age. Girls as well as boys of all ages did the work; a slight tendency to spare girls, apparent for all ages in the Michigan families, in Colorado affected only girls under 10 years of age.

More than half the Colorado child workers had worked more than six weeks in the beet fields in 1920. Practically the same proportion of Michigan workers had spent more than four weeks at the work, and at the time the study was made in Michigan the fall work of pulling and topping, which would add two or more to the number of weeks worked, had not begun.

Contract laborers' children in both sections worked several weeks longer than did the children of beet farmers, whose acreages, even in Colorado, where the beet farms were relatively large, were smaller than those for which a laborer usually took a contract. Partly because of the smaller acreage, the children of farm owners and tenant farmers did not work under the same pressure as did the children of contract laborers. In many cases their hours were shorter and the weeks spent at the work were fewer; but even when growers' children worked long hours throughout a number of weeks the acreage which they worked indicates that usually they were not obliged to work so hard and so fast as laborers' children, who as

soon as they completed the work in one field were set to work on another. Practically all the working children in each section studied took part in the spring process, for even the youngest children can thin, and the necessity for thinning out the plants before they have grown too large is urgent. Only about four-fifths of the working children in each of the sections did hoeing. Not only is the need for haste, and consequently for using all hands, less than during blocking and thinning, but the work is also somewhat heavier than the spring process and can not be done so satisfactorily by very young children. In Colorado 85 per cent of the children worked from 9 to 14 or more hours a day in the thinning season, as compared with only 67 per cent in Michigan—a difference probably due to the relatively larger proportion of farm owners with small acreages in the Michigan study. The proportion—two-thirds—working nine hours a day or longer while hoeing was no greater in Colorado than in Michigan. Even the contract laborers' families, who constituted the bulk of those visited in Colorado, were able to take this work in a somewhat more leisurely way than they had the blocking and thinning. No fall work had begun at the time of the study in Michigan. In Colorado the labor of practically all the children was again utilized in pulling and topping in order to get in the crop before it was caught by a heavy frost or otherwise spoiled; three-fourths of the children working at this process reported a working day of from 9 to 13 hours.

The Colorado children were more experienced workers than those in the Michigan families included in the survey. Of the former, only 17 per cent of those from 10 to 15 years of age were working in the beet fields for the first time; of the latter, 35 per cent were beginners. On the one hand many of the Russian-German workers in Colorado had been engaged in beet-field work season after season for a number of years; on the other, some of the Michigan farmers' families owing to local conditions were doing their own handwork for the first time. The more experienced Colorado child workers on an average cared for 5.9 acres per child, whereas the Michigan workers averaged only 4.1 acres per child.

In both sections absence from school for work in the beet fields, especially during the harvest season, was reported, and difficulty was experienced in enforcing the school attendance law in the case of beet-field workers. The average percentage of attendance for resident children in the Colorado section who attended schools making no special provisions for beet-field workers was 74 per cent in the case of laborers' and 89 per cent in the case of farm owners' children. In Michigan these percentages were 72 and 85, respectively. In Colorado summer sessions provided for beet-field workers in a few

towns had resulted in bringing up the percentage of attendance to 90 for laborers' as well as for farmers' children attending these schools. The proportion of retarded children in the families studied in each area was considerably larger than the average. Thirty-five per cent of the resident children 8 to 16 years of age in Michigan beet-field workers' families and three-fifths of the corresponding group in Colorado were retarded from one to six or seven years. The comparatively large number of farm owners' children, who are less retarded than laborers' children, decrease the proportion of retarded children in the Michigan families. Most of the Michigan children living near the beet fields attended rural schools. About half the Colorado children attended schools in the sugar-factory towns, and these children had a percentage of retardation more than twice as large as the average for city schools, measured by even a very conservative standard. Children attending schools providing a summer session for beet-field workers were little, if any, less retarded than those for whom no such provision had been made, despite the improvement in their school attendance. Such sessions have been held at most but two or three seasons, and it is impossible as yet to ascertain what effect they may have in reducing retardation among the children who lose time from the regular session for work on the beet farms.

Supplementary studies of school attendance and retardation among resident children in both sections covering approximately 3,000 children in Colorado and 1,300 in Michigan showed that the percentage of school attendance of beet-field working children of every age was from 20 to 30 less than that of nonworking children and that the proportion of retarded working children was greater for every age than that of retarded nonworking children. In the Colorado section the percentage of retardation for workers ranged, according to the ages of the children, from one and one-third times to more than twice that for children who had not stayed out of school to work in the beet fields.

The children of migratory laborers are likely to lose even more time from school than resident children, as they are withdrawn from school early in the spring in order to get settled in the beet-growing area in time for thinning and seldom return to town until late November or December, some weeks after school has begun. Among the migratory laborers' families in the Colorado section the percentage of retarded children was 62; that for children in the Michigan migratory families was 47.

The mothers of many young children were beet-field workers. Very few of the Russian-German mothers, including farmers' as well as contract laborers' wives, in the Colorado families studied did

not work in the beet fields. In Michigan, on the other hand, although proportionately as many mothers in contract laborers' families did beet-field work as in Colorado, only about one-half of the farm owners' wives worked in the fields. Farm owners' wives of native birth were relatively numerous in the Michigan section, and among these women field work is not customary. The average number of seasons at work was 8 for Colorado women and only 3 for Michigan women. Women worked about the same hours and approximately the same number of weeks as children, and during the busy seasons were able to give little attention to their homes or the care of their children. Babies were usually taken to the field, where they remained all day, in some cases sheltered by a canvas tent, but in others without even the shade of a tree. In many families they were left at home, either alone or with older children to care for them. Many of these caretakers were under 7 years of age.

Family earnings from beet contracts ranged from less than \$100 to \$3,000 or more, according to the number of workers and their ability. In both sections studied the largest group, approximately one-fifth of the laborers' families, expected to receive for their season's work in the beet fields from \$800 to \$1,000. About one-half of the families in Colorado and less than one-third of those in Michigan earned \$1,000 or more. The value of a child's work, if he engaged in all the processes, averaged in the Colorado section about \$200 and in Michigan from \$114 to \$122.⁷ The Michigan children, it will be remembered, were far from being such experienced workers as the Colorado children.

The Colorado families, especially the resident Russian-Germans, were supported largely, if not entirely, by their beet-contract earnings. About one-fourth of the Colorado fathers did no regular work from beet season to beet season, partly, no doubt, because winter work was scarce, but also because the earnings of women and children from their work in the beet fields relieved the father in some cases of the necessity of working throughout the year to support his family. In Michigan only 7 per cent of the fathers who were laborers had had no employment during the winter preceding this survey.

⁷ Includes a bonus of \$7 an acre.



FAMILIES WORKING IN THE COLORADO BEET FIELDS.

SCOPE AND METHOD OF STUDY.

The beet-sugar industry has been developed on a larger scale in Colorado than in any other State in the Union, and for a number of years Colorado has led all States in the area harvested and the tons of sugar produced, though both Michigan and Utah have as many sugar factories in operation.⁸ The beets are grown in the irrigated basins of the Platte and the Arkansas Rivers, the Arkansas Valley covering a tract of land approximately 125 miles long from the Kansas State line to Pueblo, and the northern irrigated districts reaching north from Denver for about 75 miles, then running east and north again along the Platte River. On the western slope of the Rockies along the Grand and the Gunnison Rivers is another irrigated beet-growing section, but the area there is small compared to that in the eastern part of the State.

The present study of child labor and the work of mothers in the Colorado beet fields was made in the beet-raising area north of Denver, in Weld and Larimer Counties. In no other two counties in Colorado are beets so extensively grown. In Weld County there were in 1920 three sugar factories—one at Eaton, one at Greeley, and one at Windsor—which reported⁹ 45,412 acres of beets tributary to them. In Larimer County there were two sugar factories, one at Fort Collins and one at Loveland, supplied from 30,130 acres of beets. All these factories were owned by one sugar company. They reported to the Children's Bureau that 4,234, or 44 per cent of the hand workers who they stated were required, were brought in from outside districts and that the remaining laborers were resident, usually living in towns near the beet fields the year round. Practically all the resident workers were members of family groups. Approximately 80 per cent of the nonresident workers also were in family groups,

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⁹ Each of the beet-sugar factories in the districts selected for study in both Colorado and Michigan furnished the Children's Bureau with information for their territory on the following points: (1) Number of acres in sugar beets; (2) number of sugar-beet growers; (3) number of growers owning farms; (4) number of growers renting farms; (5) number or proportion of growers who do their own handwork and hire no laborers; (6) number of hand laborers required; (7) proportion of these laborers who are resident; (8) proportion of resident laborers who are single men; (9) total number of transient laborers brought in for season of 1920 by company; number of single men and number of family groups thus brought in; (10) proportion of farms in the district growing beets.

according to the figures given by the four factories reporting on this point. Thus about nine-tenths of the workers, resident and migratory, as reported by four of the five factories in the two counties belonged in families in which father, mother, and some or all of the children worked in the beet fields.

Families in these two counties in which at least one child under 16 years of age or the mother of a child under 6 had worked in the beet fields for at least one week in the season of 1920 were selected as the basis of the study and were visited by agents of the bureau. It was difficult to locate families having children at work, especially as at the time the study was begun (the 1st of September) no hand-work in the beet fields was in progress and the resident workers had returned to their homes in the near-by towns to await the harvest season. The best means of securing the names of resident families with children appeared to be to take the names of the children who had enrolled in the summer schools and early school sessions of both counties. These were almost exclusively children who were taking summer-school work because they expected to be out in the fall for the beet harvest.¹⁰ The complete enrollment was taken for schools at Greeley, Windsor, Fort Collins, and Loveland, which were holding summer sessions,¹¹ and for four rural schools in each of the two counties. The lists so secured did not include the names of many nonresident families, for they did not, in many cases, put their children in school in these districts. In order to secure a proper proportion of these families, lists giving the names and locations of families brought in for the work were secured from the sugar factories, and districts were selected for visiting to which the sugar factories reported that transient families had been sent. In addition, agents making the visits were instructed to take the name of every unlisted family found in the district which they visited and to ask especially for transient families. Notwithstanding these efforts a very large proportion of resident families seems to have been included in the study, as compared with the proportion of resident laborers shown by the figures of the sugar factories. As a result the report depicts somewhat more favorable conditions, at least in respect to the school progress made by the children,¹² than if the proportion of transient families included in the study had been more nearly representative of the counties as a whole.

ECONOMIC STATUS OF FAMILIES.

The great majority—over three-fourths—of the 542 families interviewed in the two counties, were those of contract laborers. Com-

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paratively few were families owning or renting farms and cultivating their own beets; barely a tenth were farm owners, and only 13 per cent were tenant farmers. It will be remembered that no family was included in the study unless at least one child or the mother worked in the beet fields, and, as a rule, the grower, even when he only rents his land, does not do the handwork on his beet crop, nor is this work performed by the members of his family.¹³ The tenants and farm owners whose families work are usually men who have risen from the ranks of contract laborers, and who, with few exceptions, are living in a poor way on the land, striving body and soul to save enough money to purchase a farm or to add to the few acres which they have laboriously acquired. For farm owners, at least, there is a certain social stigma attached to "working in the beets," and they are likely to hire contract labor for the work as soon as they are able to do so.

Of the 418 laborers' families in the study, 348 were resident in the beet-growing area. Many of these families had come directly from Europe, where they had worked in the beet fields, some of them since childhood. They were with few exceptions thrifty, industrious, and ambitious, anxious to save money, buy a farm, and "let some one else work the beets." When not engaged on the beet crop the fathers, if they had any other occupation, were for the most part general farm hands, or else they worked in the sugar factories during the weeks following the harvest when sugar was being made, living during the winter in shacks and small houses, which they usually owned, clustered on the outskirts of the sugar-manufacturing towns. Seventy families of laborers had been brought into the area for the work from more or less distant points in the United States, where most of the men had worked as factory hands, miners, or railroad laborers.

Slightly fewer children to a family were reported among the laborers included in the study than among the growers, so that although more than three-fourths of the families were those of laborers, less than three-fourths of the children were laborers' children. An even smaller proportion of the children over 6 years of age were in laborers' families. The laborers' families included more young couples with babies and small children, whereas the beet growers were older people, many of them with grown sons and daughters.

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Age of child.	Children under 16 years of age.						
	Total.	Economic status of family.					
		Laborer.		Tenant farmer.		Farm owner.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	2,115	1,581	74.8	310	14.7	224	10.6
Under 6 years.....	715	561	78.5	99	13.8	55	7.7
6 years, under 16.....	1,400	1,020	72.9	211	15.1	169	12.1

NATIONALITY.

Nativity.

Few of those who work in the beet fields of Colorado are the wives and children of native Americans, and these with rare exceptions are of foreign extraction, the grandparents of the children having been born in foreign countries. Less than 15 per cent of the fathers and mothers in the families visited had been born in America, and over two-fifths of these were of Mexican stock. On the other hand, most of the children themselves had been born in the United States. About one-fourth of those between 6 and 16 years of age had not been born in this country, but less than a fifth of all the children and only 3 per cent of those under 6 years of age were foreign born.

Russian-Germans formed the largest group of foreign-born parents. Not quite seven-tenths of the fathers were of this stock and their children constituted not quite three-fourths of all the children in the study. The Russian-Germans predominated in every economic group—laborer, tenant farmer, and farm owner. They made up the bulk of the resident families who may be considered the backbone of the hand labor in the Colorado beet fields. They had been brought into the State originally in the early years of the beet industry when its increasing growth demanded more laborers than could be secured near by. Although they came to the United States from Russia, they are descendants of Germans who migrated to Russia in the eighteenth century but who did not intermarry with the Russians to any extent, retaining even to this day their Teutonic habits, language, and religion. They cling also to the customs of their forefathers, one of which is that women and children work in the fields. Many of them had been beet-field laborers before they came to the United States, for although Germany led the world in beet-sugar production previous to the war, most of her agricultural laborers were imported

from Russia, and Russia herself was second only to Germany in beet-sugar production.¹⁴

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Nationality not reported.....	12	.6	8	.5			4	1.8
Nativity not reported.....	3	.1					3	1.3

In contrast to this predominance of Russian-Germans in the resident labor supply, most of the migratory laborers brought into Weld and Larimer Counties in the season of 1920 were Mexicans—90 per cent according to the figures furnished the Children's Bureau by the sugar factories. Six per cent of the fathers included in the study were Mexicans, and another 6 per cent were of Mexican stock. Their children formed respectively 7 and 5 per cent of the total number of children¹⁵ included in the survey. Most of the families had been brought from Texas, many having gone there directly from Old Mexico during the war-time suspension of immigration restrictions. Others came from New Mexico or the mining districts of Colorado. As yet the Mexicans have not been assimilated by the communities to which they have flocked. None of those included in the present study had progressed to the position of farm owners, or even tenant farmers. In Weld and Larimer Counties they seldom remain through the winter. Little or no work is to be had, and the climate is colder than they like. Every day after the 1st of November sees little groups of them at the railroad stations, many of them thinly clad, carrying shabby bits of hand baggage. They make their way

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¹⁴ The Sugar Industry, U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Miscellaneous Series No. 9, p. 102. Washington, 1913.

¹⁵ If more migratory families had been included, the proportion of Mexicans would have been larger. See p. 12.

back to the South or in some cases only to Denver, to live crowded in miserable shanties until spring calls them out again to the beet fields.

Knowledge of English.

Many of the children whose families work in the beet fields hear English for practically the first time when they go to school. As the result of a law passed in 1919¹⁰ requiring instruction in the common branches to be given in the English language this situation will probably improve. Prior to the passage of the law instruction in the parochial schools attended by many of the children was in German. Even among the children 6 years old or over, in the families studied, 53 could speak no English, though 22 of them had been born in this country. Eighty-eight of the fathers and 251 of the mothers had no knowledge of the language. The Russian-Germans live apart in their own little settlements and worship in their own churches, and despite the fact that many of them had been in the United States 10 or 15 years and none less than 5 years, German is the language of the household. The men come in contact with English-speaking persons in their daily work to some extent, but the women seldom go outside their homes. Thus most of the Russian-German fathers (82 per cent) had acquired some knowledge of English, at least enough to make themselves understood, but less than half the mothers were able to speak English.

TABLE IV.—*Literacy and ability of father to speak English, by number of years in the United States and nationality; fathers in families that worked in beet fields: Colorado group.*

Years in the United States and nationality of father.	Fathers.								
	Total.	Unable to speak English.		Unable to read English.		Unable to read and write English.		Unable to read and write in any language.	
		Num-ber.	Per-cent. ^a	Num-ber.	Per-cent. ^a	Num-ber.	Per-cent. ^a	Num-ber.	Per-cent. ^a
Total.....	518	88	17.0	343	66.2	372	71.8	108	20.8
Native.....	74	1	1.4	16	21.6	21	28.4	7	9.5
Mexican.....	33	1	.....	16	.....	20	.....	6	.....
Other.....	41	.....	.....	.....	.....	1	.....	1	.....
Foreign-born.....	444	87	19.6	327	73.6	351	79.1	101	22.7
Less than 3 years.....	16	12	.....	15	.....	15	.....	8	.....
3 years, less than 5.....	9	5	.....	9	.....	9	.....	5	.....
5 years, less than 10.....	155	46	29.7	130	83.9	136	87.7	45	29.0
10 years, less than 15.....	134	15	11.2	98	73.1	104	77.6	26	19.4
15 and over.....	127	8	6.3	74	58.3	86	67.7	17	13.4
Not reported.....	3	1	.....	1	.....	1	.....	.....	.....

^a Not shown where base is less than 50.

^b Excludes 23 fathers who were dead or had deserted and 1 for whom nationality, years in the United States, ability to speak English, and literacy were not reported.

¹⁰ Colorado Laws, 1919, ch. 179.

TABLE V.—Literacy and ability of mother to speak English, by number of years in the United States and nationality; mothers in families that worked in beet fields: Colorado group.

Years in the United States and nationality of mothers.	Mothers.								
	Total.	Unable to speak English.		Unable to read English.		Unable to read and write English.		Unable to read and write in any language.	
		Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹
Total.....	525	250	47.6	429	81.7	444	84.6	222	42.3
Native.....	79	15	19.0	25	31.6	28	35.4	13	16.5
Mexican.....	33	15	.....	22	.....	25	.....	10	.....
Other.....	46	.....	.....	3	.....	3	.....	3	.....
Foreign born.....	446	235	52.7	404	90.6	416	93.3	209	46.9
Less than 3 years.....	21	21	.....	21	.....	21	.....	16	.....
3 years, less than 5.....	13	11	.....	13	.....	13	.....	10	.....
5 years, less than 10.....	159	112	70.4	152	95.6	154	96.9	73	45.9
10 years, less than 15.....	132	58	43.9	120	90.9	123	93.2	60	45.5
15 and over.....	121	33	27.3	98	81.0	105	86.8	50	41.3

¹ Not shown where bases less than 50.

² Excludes 16 mothers who were dead or away or had deserted, and 1 for whom nationality, years in the United States, ability to speak English, and literacy were not reported.

The Mexicans are comparatively newcomers to the beet fields—little more than half the fathers and only one-third of the mothers in the study had lived in the United States as much as 5 years. Considering that they stay but a short time in any one place, and like most of the foreign born tend to live in little colonies of their own, it is not surprising that of the native Mexican fathers included in the study only 42 per cent could speak English. As always among immigrants, the women, coming in contact with Americans even more gradually than the men, learn English much more slowly, and only 7 per cent of the mothers could speak the English language. Of the Mexican parents born in the United States, all the fathers except one could speak English well enough to make themselves understood, whereas almost half the mothers had no knowledge of the language. Some of the women may have spent part of their lives in Old Mexico, but it is highly probable that many of them grew up in the United States without attending school or attending schools where the instruction was in Spanish, always speaking their native tongue in the family, and not mingling enough with outsiders to pick up English as the men did.

Where so few had a speaking knowledge of English one might expect that the ability to read and write it would also be the exception rather than the rule. Such, indeed, proved to be the case: Only 1 foreign-born father in 4 could read the language, and only 1 in 5 was able both to read and to write English. Only 42 of the 446 foreign-

born mothers had learned to read English and only 30 to read and write it. In addition to their ignorance of English a large number of the parents were illiterate even in their own language.

Thus handicapped it is difficult for these parents to share in any way in the life of the community. Besides the personal inconvenience which they suffer they are cut off from the many avenues of popular instruction which would be of assistance in safeguarding their children's health, in guiding their conduct, and in becoming their companions. It is difficult for them to understand American customs, ideals, and institutions, and if they do not cooperate with the public schools as effectively as might be desired it is hardly to be wondered at.

Little attempt has been made locally to provide instruction for non-English speaking men and women. In the two counties studied only one instance of an evening school for adults was found. In Greeley, at the instigation of the local woman's club, an evening school had been held in the late winter and spring of 1920. It was spoken of with appreciation many times by the foreign-born beet-field workers who had attended it, and regret was expressed that it had been started so late that many had been obliged to withdraw for the spring work before the course was completed.

CHILD LABOR.

Number and ages of children and duration of work.

In the families visited 1,073 children between 6 and 16 years had worked in the beet fields during the season of 1920. All except 37 of them had worked for their own parents and without remuneration. The child-labor law of Colorado, like that of most States, exempts agricultural work from its minimum-age provision,¹⁷ and children may be put to work in the fields at any age. Four children even younger than 6 years were reported by their parents as having worked a part of each day for from one to eight weeks. Among the working children between 6 and 16 years of age covered by the study, well over one-fourth were less than 10 years of age, and more than one-half were from 10 to 13, inclusive. Only 191 working children had reached their fourteenth birthdays.

¹⁷ The law prohibits work in specified occupations, not including agricultural pursuits, under the age of 14 and also any work for compensation "during any portion of any month when the public schools * * * are in session." It continues, "Nothing in this act shall be construed to prevent the employment of children in any fruit orchard, garden, field or farm: *Provided*, That any child under 14 years of age engaging in such employment for persons other than their own parents must first secure a permit from the superintendent of schools in accordance with the provisions of section 15 of this act. The hours of work during each day, or in any week shall be in compliance with the provisions of this act as to the hours during any day or week when children may be employed." The natural interpretation of the last sentence is that the maximum hours provision of the child labor law (See footnote 19, p. 22) applies to children working in "fruit orchard, garden, field, or farm." Mills' Annotated Statutes, revised edition 1912, sec. 657.

TABLE VI.—Age of child, by economic status of family; children between 6 and 16 years of age working in beet fields: Colorado group.

Age of child.	Children between 6 and 16 years of age working in beet fields.							
	Total.		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	1,073	100.0	474	100.0	164	100.0	135	100.0
6 years, under 7.....	15	1.4	8	1.0	6	3.7	1	.7
7 years, under 8.....	56	5.2	44	5.7	6	3.7	6	4.4
8 years, under 9.....	91	8.5	78	9.8	7	4.3	8	5.9
9 years, under 10.....	127	11.8	95	12.3	20	12.2	12	8.9
10 years, under 11.....	171	15.9	130	15.5	31	18.9	20	14.8
11 years, under 12.....	116	10.8	81	10.5	19	11.6	16	11.9
12 years, under 13.....	170	15.8	124	16.0	24	14.6	22	16.3
13 years, under 14.....	136	12.7	95	12.3	23	14.0	18	13.3
14 years, under 15.....	122	11.4	83	10.7	17	10.4	22	16.3
15 years, under 16.....	69	6.4	48	6.2	11	6.7	10	7.4

¹ Excludes 4 children under 6 who worked in beet fields.

The tendency among the families in which it is customary for children to work is to make the children's labor count as soon as possible. As one of the mothers said, "Asa's worked ever since he could lift a beet." More than three-fifths of the 8-year-old children in the families in which at least one older child had already gone to work were beet-field workers.¹⁸ From the age of 10 on, practically all worked in the cultivation of beets. Even among the 6- and the 7-year-old children one child in four was reported as working. Girls as well as boys worked at all ages, but there appeared to be a tendency to spare the youngest girls. Thus, 60 per cent of the boys under 10 years of age in the families studied but only 36 per cent of the girls under 10 years of age were reported as working; all the 10-year-old boys helped with the crop, as compared with 89 per cent of the 10-year-old girls. In these families, however, the proportions of working girls and boys over 10 years of age who worked were practically identical—94 and 95 per cent, respectively.

The work, it will be remembered, is not continuous. Blocking and thinning, the first handwork, begins about the 1st of June. During the last days of May wagons or motors carrying the beet-field laborer's family and his household goods, with perhaps a chicken coop on top and the family cow bringing up the rear, fill the roads leading

¹⁸ The totals on which are based this proportion and the following proportions of children of different ages at work exclude 189 children—(1) the eldest working child in each family, and (2) children who were the only child workers in their respective families. To avoid a bias in favor of a high proportion of children working which would be given by the basis of selection of families in the present study (i. e., families in which at least one child worked), these working children who presumably furnished the reason for the selection of the family are excluded.

out from Greeley, Fort Collins, Loveland, and other neighboring sugar-factory cities where the resident beet-field laborers live during the winter. By the 1st of June they, as well as the migratory workers, have been apportioned among the farmers and are established in the shelters provided for them, usually adjacent to the beet fields where they are to work. Shortly after blocking and thinning are completed, hoeing is begun, and, if several hoeings are required, may extend into August. From the middle of August until the harvest there is no handwork in the beet fields. After the last hoeing the resident families usually return to their homes on the outskirts of the near-by cities. The early days of October witness their second migration to the beet fields, this time for the work of pulling and topping.

At the time of the Children's Bureau agent's visit many families had not completed the fall work, and some of them expected to work at least two or three weeks longer. Of the 1,073 working children, 571 had already spent more than six weeks in the beet fields during the 1920 season, and 61 of them had worked from 12 to 17 weeks. The latter were all laborers' or tenants' children. Five children under 8 years of age, 18 between 8 and 9, and 16 between 9 and 10 had worked 10 weeks or more. One-fifth of the laborers' children had worked at least 10 weeks—practically twice as many proportionately as the children of tenant farmers. The largest group of owners' children had worked five weeks and the largest group of tenants' and of laborers' children had worked seven weeks.

TABLE VII.—Number of weeks worked, by age of child; children between 6 and 16 years of age working in beet fields: Colorado group.

Age of child.	Children between 6 and 16 years of age working in beet fields.												
	Total.	Number of weeks worked.											
		Less than 1.		1		2		3		4		5	
		Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹
Total.....	1,073	4	0.4	24	2.2	28	2.6	57	5.3	81	7.5	125	11.6
6 years, under 7.....	15							3		1		3	
7 years, under 8.....	56	1	1.8	1	1.8	1	1.8	6	10.7	6	10.7	9	16.1
8 years, under 9.....	91	1	1.1	3	3.3	1	1.1	8	8.8	8	8.8	11	12.1
9 years, under 10.....	127			3	2.4	5	3.9	9	7.1	8	6.3	19	15.0
10 years, under 11.....	171	1	.6	6	3.5	5	2.9	12	7.0	12	7.0	15	8.8
11 years, under 12.....	116			2	1.7	2	1.7	3	2.6	12	10.3	17	14.7
12 years, under 13.....	170	1	.6	5	2.9	4	2.4	7	4.1	8	4.7	19	11.2
13 years, under 14.....	136			1	.7	5	3.7	5	3.7	11	8.1	15	11.0
14 years, under 15.....	122			3	2.5	3	2.5	2	1.6	10	8.2	10	8.2
15 years, under 16.....	69					2	2.9	2	2.9	5	7.2	7	10.1

¹ Not shown where base is less than 50.

² Excludes 4 children under 6 years of age who worked in beet fields.

TABLE VII.—Number of weeks worked, by age of child—Continued.

Age of child.	Children between 6 and 16 years of age working in beet fields.											
	Number of weeks worked.											
	6		7		8		9		10		11	
	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹
Total.....	119	11.1	154	14.4	117	10.9	118	11.0	78	7.3	43	4.0
6 years, under 7.....	2		1		3		1					
7 years, under 8.....	5	8.9	9	16.1	5	8.9	5	8.9	1	1.8	1	1.8
8 years, under 9.....	11	12.1	12	13.2	7	7.7	5	5.5	10	11.0	2	2.2
9 years, under 10.....	15	11.8	21	16.5	19	15.0	5	3.9	8	6.3	2	1.6
10 years, under 11.....	16	9.4	19	11.1	15	8.8	25	14.6	15	8.8	11	6.4
11 years, under 12.....	11	9.5	17	14.7	11	9.5	15	12.9	10	8.6	5	4.3
12 years, under 13.....	21	12.4	24	14.1	24	14.1	16	9.4	13	7.6	7	4.1
13 years, under 14.....	11	8.1	24	17.6	12	8.8	16	11.8	11	8.1	6	4.4
14 years, under 15.....	18	14.8	16	13.1	14	11.5	17	13.9	8	6.6	5	4.1
15 years, under 16.....	9	13.0	11	15.9	7	10.1	13	18.8	2	2.9	4	5.8

Age of child.	Children between 6 and 16 years of age working in beet fields.											
	Number of weeks worked.											
	12		13		14		15		17		Not reported.	
	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹
Total.....	24	2.2	22	2.1	9	0.8	4	0.4	2	0.2	64	6.0
6 years, under 7.....											1	
7 years, under 8.....	2	3.6	1	1.8							3	5.4
8 years, under 9.....	2	2.2	1	1.1	1	1.1	1	1.1	1	1.1	6	6.6
9 years, under 10.....	4	3.1	2	1.6							7	5.5
10 years, under 11.....	5	2.9	2	1.2	3	1.8					9	5.3
11 years, under 12.....			4	3.4			1	.9			6	5.2
12 years, under 13.....	6	3.5	2	1.2	2	1.2					11	6.5
13 years, under 14.....	3	2.2	6	4.4			1	.7			9	6.6
14 years, under 15.....	1	.8	3	2.5	2	1.6	1	.8	1	.8	8	6.6
15 years, under 16.....	1	1.4	1	1.4	1	1.4					4	5.8

¹ Not shown where base is less than 50.

² Excludes 4 children under 6 years of age who worked in beet fields.

The farmer whose family works in the beet fields has usually only a small beet acreage and needs help for only 2 or 3 weeks, whereas a laborer will require the help of his children for from 6 to 12 weeks or even longer to take care of the acreage for which he has contracted. Three-fourths of the farm owners and three-fifths of the tenant farmers in the study cared for less than 30 acres of beets as compared with one-half the contract laborers, and half the farm owners had less than 20 acres of beets. Thus it was unnecessary for the children in farm owners' families to work either such long hours or so many weeks a season as the children of contract laborers did.

In addition to the work on the beet crop, it should be noted that many of the children did a variety of other farm work, adding to

the number of weeks spent in the fields. For example, both boys and girls took part in threshing and haying, helped cultivate various crops, tended stock, and, more rarely, loaded beet wagons. Some of the boys 12 years of age and older did heavier work, such as plowing. Many of the farmers' children who did such work as this had worked only a few weeks on the beet crop. Others, however, had spent as much time in the handwork as the laborers' children. In addition to 11 weeks' work "in beets" one farmer's boy had done cultivating, driven a team, mowed and stacked hay; and another had done cultivating and haying besides $9\frac{1}{2}$ weeks' work in the beet fields. Although it was usually the farmers' children who had such tasks as these, it was not uncommon for the contract laborers' families to do other jobs in the intervals between the work on the beet crop. Among the many children who worked at gathering potatoes from the ground was a 7-year-old girl who had spent over 4 weeks in the beet fields. A number of the younger children weeded onions, and one 9-year-old boy with his older brothers topped them in addition to spending 11 hours a day for more than 7 weeks working in the beet fields. One 10-year-old girl cut corn and gathered potatoes besides spending 12 weeks on the beet crop. Three little boys hoed beans and gathered potatoes in the intervals between their handwork in the beet fields. Another 12-year-old boy did both cultivating and planting in addition to more than 11 weeks of work on his father's beet contract.

The number of weeks that the children work and the length of their working day,¹⁹ like the age at which they begin to work, is in practice determined according to the judgment of the individual parent. Some of the parents included in the survey were careful about the amount and kind of work their children did. "Too hot; such work not for kids," they would say, or "So hard work not good for children." One mother helped with the thinning herself, though she was not well, because she was "sorry for Jacob," who at 8 years of age worked $6\frac{1}{2}$ to $10\frac{1}{2}$ hours a day for 7 weeks during the beet season. Some parents, on the other hand, usually the excessively thrifty ones, eager to "get ahead" at any cost, drove their children hard. A few accounts of the work done by individual families will make clear the attitude of different parents toward their children's work, besides illustrating conditions under which the work is done.

Four Russian-German children, ranging in age from 9 to 13 years, came to the beet fields with their family the 1st of June. They worked at thinning and blocking for more than 3 weeks, $14\frac{1}{2}$ hours a day, beginning at 4.30 a. m. They

¹⁹The Colorado child labor law provides a maximum of 8 hours per day at "any gainful occupation" for children under 16, with exemptions limited to children of 12 years of age and over, on special permit granted by the county school superintendent or his deputy. (Mills' Annotated Statutes, Revised Edition, 1912, secs. 657, 671.)

took 5 minutes in the morning and again in the afternoon for a lunch when, as they said, they "just got chunks in." They took 20 minutes for dinner. About July 1 they went home, remaining until the middle of the month, when the hoeing began. They spent 5 weeks, $14\frac{1}{2}$ hours a day, hoeing, and again went home, returning September 21 for the harvest, which lasted 4 weeks. During the harvest their working day lasted 10 hours only. On October 25 they returned to town for the winter, having spent a total of $12\frac{1}{2}$ weeks at work. These four children and their father and mother cared for 51 acres. Ten acres was the generally accepted average for an adult, according to statements made to the Children's Bureau by the sugar companies. The family owned a car and their town house was being repapered and repaired; two men were working on it at the time of the agent's visit.

"Healthful work for children," said one father, "if they don't work too long hours or in the heat of the day." His 15-year-old girl and 12-year-old boy never worked longer than $7\frac{1}{2}$ hours, taking about 5 hours off during the middle of the day. His 9-year-old girl worked irregularly. These three children with two adults cared for 12 acres.

Another father, who owned a small farm, declared that the work was good for children "providing they don't begin too young, don't work too long hours, and don't lose their schooling." His 13- and 11-year-old children worked from 7 a. m. to 5.30 p. m., taking 2 hours off in the middle of the day and spending only about 2 weeks at the work. They did no hoeing. These children had begun to work in the beet fields when 10 years of age.

How hard Sam and John, two boys 10 and 12 years of age, worked is indicated by the fact that they, with their parents and one other adult, worked 65 acres of beets. If each adult cared for 15 acres, which is half as much again as the average, each child would have had to care for 10 acres, the average amount supposed to be cared for by a full-grown worker. These boys worked $8\frac{1}{2}$ hours a day during the hoeing season and 10 hours daily during the fall and spring processes, covering about 11 weeks. Sam, the 12-year-old, also worked between the beet processes at cultivating and planting.

In a family in which the girls of 11 and 13 years preferred work in the beet fields to housework the statement was made that the girls worked steadily but not fast—which is evidenced by the fact that they, with three other children and two adults, took care of only 12 acres of beets, an average of less than 2 acres per person.

A Mexican family that came to Colorado from Texas about the middle of May had only 1 child at work, a girl of 12 years. She had spent over 14 weeks working in the beet fields—almost 9 weeks thinning, $3\frac{1}{2}$ weeks hoeing, and more than 2 weeks pulling and topping. The family remained in the country throughout the season, and the girl had picked beans and gathered potatoes during the interval between the completion of hoeing and the beginning of the beet harvest. She had completed only the first grade, despite the fact that the family had moved much less frequently than was customary among Mexican beet-field laborers. This family, consisting of father, mother, and 12-year-old girl, had cared for 27 acres, a fact which indicated that their work must have been fairly steady.

Three little boys of 8, 10, and 12 years, with their 15-year-old sister and their mother and father, worked on contract for more than 14 weeks 11 and 12 hours daily, caring for 53 acres of beets. This family owned a car and a new house.

a steel mill. The children don't get any fresh air as they have to lie in the dust and crawl on their knees all day."

Hours and duration of work in each process.

Blocking and thinning.—When the beet seedlings shoot a few inches above the ground about the 1st of June or a little earlier, the work of blocking and thinning begins. The blocker, usually an adult, walks down the long rows of beets chopping out the superfluous plants with his hoe. Close at his heels come the children, both boys and girls, most of them clad in overalls. Straddling the beet row, they kneel, and, bending over, crawl from plant to plant on hands and knees; they usually work at high speed, for thinning must be completed before the plants grow too large.

Of the children covered by the present study, 1,037 did blocking or thinning or both in the spring of 1920. The youngest working children can thin, and because they are active and their fingers are nimble, they are believed by some to be the most effective workers in this process. Less than a fifth of the children, including 16 per cent of the boys and 20 per cent of the girls in the survey who engaged in the spring work, had reached their fourteenth birthdays. About one-half of them, both boys and girls, were under 12, and 273 children, or more than a fourth, including 30 per cent of the boys, were under 10 years of age. In fact, 6 per cent of these child workers were less than 8 years old—15 of them only 6 years and 50 of them 7 years old. Undoubtedly these younger children worked less steadily than the older ones, but in some cases their hours were very long.

TABLE VIII.—Daily hours thinning and blocking, by age of child; children between 6 and 16 years of age working in beet fields: Colorado group.

Daily hours thinning and blocking.	Children between 6 and 16 years of age working in beet fields.										
	Total.	Age.									
		6 years, under 7.	7 years, under 8.	8 years, under 9.	9 years, under 10.	10 years, under 11.	11 years, under 12.	12 years, under 13.	13 years, under 14.	14 years, under 15.	15 years, under 16.
Total.....	1,073	15	56	91	127	171	116	170	136	122	69
Did not work thinning and blocking.....	36		6	5	5	3	3	6	3	3	2
Worked thinning and blocking..	1,037	15	50	86	122	168	113	164	133	119	67
Less than 4 hours.....	8	1	1	2	1	1		1	1		
5 hours, less than 6.....	5			1	2	1	1				
6 hours, less than 7.....	7		2		2	1	1			1	
7 hours, less than 8.....	22		2	5	2	4	1	3	2	1	2
8 hours, less than 9.....	61	1	4	5	9	12	9	6	6	6	3
9 hours, less than 10.....	214	1	5	9	29	30	26	44	27	30	13
10 hours, less than 11.....	327	3	8	27	32	55	45	50	52	36	19
11 hours, less than 12.....	213	1	12	16	27	32	17	38	26	25	19
12 hours, less than 13.....	82	1	2	5	8	16	6	14	13	9	8
13 hours, less than 14.....	24		3	4	2	2	3	3	2	4	1
14 hours and over.....	25			3	4	3	2	3	4	4	2
Not reported and irregular...	49	7	11	9	6	10	2	1		3	



THINNING BEETS.

A working day of 11 or 12 hours was not uncommon.



HOEING BEETS.

Four-fifths of the working children hoed—the majority 9 hours or more a day.



TOPPING BEETS.

A sharp heavy knife with a hook at the end is used in this operation.



MOTHERS AND CHILDREN WORK SIDE BY SIDE.

The 9-year-old boy (left) had worked 11 hours a day for over three weeks at pulling and topping.

The usual hours for agricultural work prevailed—that is, “from sunup to sundown.” Six o'clock was reported as the usual hour for beginning work, but some families started as early as 4.30 or 5 o'clock. “The old man chases us down to the field early in the morning [4 o'clock],” said one boy, adding, “But we get even with him; whenever he leaves the field we stall.” After a hasty breakfast, eaten in some cases in the field, work was practically continuous until mid-day, when the majority of the families went home to a hot dinner. There was not a general lay off, as in some kinds of farm work, during the heat of the day. Only an hour was usually allowed for dinner. A few of the families reported their “dinner hour” as lasting only 10 minutes. Work continued until 6 or 7 o'clock. About half the laborers' families said that they took a rest of 15 minutes or half an hour in the morning or afternoon, or both, often eating a slice of bread at that time, but some regarded such a practice as “all foolishness.”

The net working day, exclusive of meals and rest periods, was, according to statements made by parents, 9 hours for 85 per cent of the children, both boys and girls, of whom 36 were children only 6 or 7 years of age. One-third of the children, however, reported 11 hours or more and one-eighth of them 12 to 15 hours as constituting a regular working day. Six children under 8 years of age worked 12 hours or more, and all except 6 of the 65 working children aged 6 and 7 years were reported as putting in a working day of at least 8 hours. With such long hours, it is hardly surprising that, as one boy said, “Your back gets awfully tired from thinning. Sometimes you get such headaches you can't hardly stand it.” Children in families owning or even renting their farms worked somewhat shorter hours than did the children of laborers. Nevertheless, almost nine-tenths of the farm owners' children who did thinning and blocking worked 9 hours or more a day, and approximately one-fourth of them were reported as working from 11 to 14 or more hours daily. These long working days continued in some cases for weeks. A number of the children included in the study, somewhat over one-tenth of the total number, had worked practically throughout the spring process; that is, 5 or 6 weeks or more. One 12-year-old Mexican child had had to work at thinning almost 9 weeks in order to complete with the aid of his father and mother a 27-acre contract.

majority among these children, as among the group as a whole, were children from 10 to 13 years of age.

TABLE X.—Daily hours hoeing, by age of child; children between 6 and 16 years of age working in beet fields: Colorado group.

Daily hours hoeing.	Children between 6 and 16 years of age working in beet fields.										
	Total.	Age.									
		6 years, under 7.	7 years, under 8.	8 years, under 9.	9 years, under 10.	10 years, under 11.	11 years, under 12.	12 years, under 13.	13 years, under 14.	14 years, under 15.	15 years, under 16.
Total.....	1,073	15	56	91	127	171	116	170	136	122	69
Did not work hoeing.....	213	8	21	35	28	32	24	29	16	13	7
Worked hoeing.....	860	7	35	56	99	139	92	141	120	109	62
Less than 4 hours.....	21	1	.....	2	2	5	1	3	3	4	.....
4 hours, less than 5.....	14	.....	1	3	1	2	2	3	1	1	.....
5 hours, less than 6.....	9	.....	.....	.....	2	4	1	.....	1	1	.....
6 hours, less than 7.....	24	.....	2	2	1	5	3	4	3	3	1
7 hours, less than 8.....	54	1	2	3	7	4	8	7	14	4	4
8 hours, less than 9.....	90	.....	2	2	9	14	11	21	10	13	8
9 hours, less than 10.....	197	1	5	12	19	35	26	32	23	27	17
10 hours, less than 11.....	209	.....	5	13	24	34	21	30	39	27	16
11 hours, less than 12.....	115	.....	7	6	12	17	9	24	12	17	11
12 hours, less than 13.....	41	.....	2	2	4	8	2	8	8	4	3
13 hours, less than 14.....	15	.....	1	4	.....	2	1	3	1	2	1
14 hours and over.....	12	.....	1	3	1	1	1	2	1	2	1
Not reported and irregular.....	59	4	8	6	15	8	6	4	4	4	.....

The working-day was slightly shorter in hoeing than in blocking and thinning, and was of approximately the same length for both sexes. The hour of starting work was later, being usually 7 a. m., and the working-day usually ended at 6 p. m. The time for the mid-day meal, too, was longer and in general the workers took the work more easily. Nevertheless, 589 children, or 69 per cent, worked 9 hours or more daily; 21 per cent, 11 hours or more; and 8 per cent, 12 hours or longer.

A larger proportion of the children in farm owners' families who hoed than of either laborers' or tenant farmers' children, reported that they worked 9 hours or more, possibly because the group included proportionately more older children; that is, children from 12 to 15 years of age. But no beet grower's child, even in families that rented their land, worked at hoeing as much as 13 hours, whereas 27 of the contract laborers' children—14 of them from 7 to 11 years of age—were reported as having had a working-day of 13 hours or even longer.

TABLE XI.—Daily hours hoeing, by economic status of family; children between 6 and 16 years of age working in beet fields: Colorado group.

Daily hours hoeing.	Children between 6 and 16 years of age working in beet fields.							
	Total.		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	1,073		774		164		135	
Did not work hoeing.....	213		159		30		24	
Worked hoeing.....	860	100.0	615	100.0	134	100.0	111	100.0
Less than 4 hours.....	21	2.4	17	2.8	4	3.0		
4 hours, less than 5.....	14	1.6	14	2.3				
5 hours, less than 6.....	9	1.0	5	0.8				
6 hours, less than 7.....	24	2.8	17	2.8	4	3.0		
7 hours, less than 8.....	54	6.3	35	5.7	16	11.9	3	2.7
8 hours, less than 9.....	90	10.5	69	11.2	15	11.2	6	5.4
9 hours, less than 10.....	197	22.9	128	20.8	32	23.9	37	33.3
10 hours, less than 11.....	209	24.3	153	24.9	28	20.9	28	25.2
11 hours, less than 12.....	115	13.4	84	13.7	17	12.7	14	12.6
12 hours, less than 13.....	41	4.8	34	5.5	3	2.2	4	3.6
13 hours, less than 14.....	15	1.7	15	2.4				
14 hours and over.....	12	1.4	12	2.0				
Not reported and irregular	59	6.9	32	5.2	11	8.2	16	14.4

Hoeing has to be done twice, and sometimes three times, a season, during a period of about four weeks after blocking and thinning are completed. Practically two-fifths of all the children who hoed reported that they had worked between two and three weeks on this process. The largest group among the laborers' children, and among the children of tenant farmers and of farm owners as well, was that comprised of children who had worked between two and three weeks. Nevertheless, one-third of the tenants' children, one-fourth of the laborers', and one-tenth of the farm owners' children had worked three weeks or more. Rarely, however, had a family "just hoed along all summer," as the members of one family said they had done.

Pulling and topping.—When the word goes out from the factory to begin the harvest, the farmer with a horse-drawn machine loosens the beets and lifts them to the surface. They must then be pulled up from the loose soil, struck together in order to knock off the dirt caked upon them, and thrown into piles. The smaller children usually pull up the beets and throw them into piles for the adults or larger children to top, but this division of the work depends on the working force, and occupations are shifted as the occasion demands.

The use of topping knives by children involves a certain amount of danger. Cuts on the legs or knees were rather common, and occasionally a serious hurt—sometimes the loss of a finger—was reported by a member of the family, though none of the children

visited had up to the time of the visit suffered in that season a serious permanent injury.

(Steady stooping and lifting along the beet rows day in and day out for several weeks is heavy work, and it is probably this work of pulling and topping that requires the greatest amount of physical effort on the children's part.) The father of three children who had worked in the spring and summer processes said that he was not going to top as it was "too hard on the kids." Although the average beet with its top on weighs only a little over 2 pounds,²⁰ the child lifts a considerable load in the course of his long day's work.

For 138 of the children included in this study a definite report was secured as to the acreage harvested daily. The acreage so reported averaged one-fourth of an acre per child. Inasmuch as the average beet yield in Colorado was about 11 tons an acre in 1920²¹ for the section studied, if a child pulled or topped one-fourth of an acre in a day he would handle daily about 2 $\frac{3}{4}$ tons, or, allowing one-third extra weight for tops and dirt, almost 4 tons of beets. A little girl of 10 said that she did not have the backaches complained of by many workers, but that "pulling and topping hurts awfully at the back of your neck." One mother, who described pulling as very hard, complained of "tearing pains like rheumatism after a day's work," and others, even after years of experience, said that their arms were so sore from pulling and topping that they could hardly use them.

Serious discomfort is experienced by the worker in that often the thick, rank beet tops, heavy with frost, which comes early in the mountain regions, soon soak the workers from the knees down, unless, as is rarely the case, they wear high rubber boots. "Fall is the meanest time," declared one of the fathers. "Women are wet up to their waists and have ice in their laps and on their underwear. Women and children have rheumatism. Jacob [13 years old] is big and strong but already feels rheumatism, so he has to kneel while topping. Can't stand all day." Often the clothing freezes stiff in the frosty air and only by midday does the warm sun dry off the cotton skirts or overalls. In wet years the workers say that they "get muddy to the skin." During the last weeks of the harvest, light falls of snow frequently add to the discomfort. The children's hands are chapped and cracked from the cold, and their fingers are often sore and bleeding.

²⁰ Careful records kept by the sugar factories for a number of years, for the purpose of showing farmers that large beets were not necessary for large yields, showed the average weight of the beets without tops to be 1.58 pounds. Estimates worked out for average yield, number of beet plants to the acre, and average stand, from figures secured from the United States Department of Agriculture sugar-beet investigations, show the average weight, without tops, to be 1.59 pounds, almost exactly the figure of the sugar factories.

²¹ U. S. Department of Agriculture, Monthly Crop Reporter, Dec., 1920, p. 148.

While not quite so many children take part in the harvest as in the spring work, practically nine-tenths of the working children reported that they had worked at pulling and topping. Those who can do nothing else can throw the beets loosened by the lifter into piles ready for the topper. The labor of the younger children is again utilized. Sixty workers in this process, 18 of whom were girls, were less than 8 years of age, as compared with 42 workers of this age reported as hoeing and 65 as blocking and thinning. As in blocking and thinning, over four-fifths of the children were under 14 years of age. One-fourth, including 28 per cent of the boys but only 21 per cent of the girls, were under 10 years of age. On the other hand, the largest single age group instead of being composed of children 10 years of age, as among children engaged in thinning, was 12 years of age. Those 10 years of age formed the next largest group. In these families by far the greatest number of children who did harvest work, both girls and boys, were between 9 and 13 years of age.

TABLE XII.—Daily hours pulling and topping, by age of child; children between 6 and 16 years of age working in beet fields: Colorado group.

Daily hours pulling and topping.	Children between 6 and 16 years of age working in beet fields.										
	Total.	Age.									
		6 years, under 7.	7 years, under 8.	8 years, under 9.	9 years, under 10.	10 years, under 11.	11 years, under 12.	12 years, under 13.	13 years, under 14.	14 years, under 15.	15 years, under 16.
Total.....	1,073	15	56	91	127	171	116	170	136	122	69
Did not work pulling and topping.....	114	2	9	18	19	25	7	12	7	13	2
Worked pulling and topping.....	959	13	47	73	108	146	109	158	129	109	67
Less than 4 hours.....	31	2	-----	7	6	3	2	5	3	2	1
4 hours, less than 5.....	5	-----	1	-----	-----	1	1	-----	2	-----	-----
5 hours, less than 6.....	3	-----	-----	-----	1	1	-----	-----	1	-----	-----
6 hours, less than 7.....	10	-----	2	1	-----	3	2	1	-----	1	-----
7 hours, less than 8.....	36	-----	2	3	4	6	5	6	4	4	2
8 hours, less than 9.....	71	-----	2	5	6	10	12	8	15	7	6
9 hours, less than 10.....	233	2	9	13	27	38	30	39	27	36	12
10 hours, less than 11.....	330	2	12	23	36	51	39	61	50	33	23
11 hours, less than 12.....	121	-----	5	6	15	16	8	24	15	12	20
12 hours, less than 13.....	23	-----	-----	3	2	1	2	4	6	4	1
13 hours, less than 14.....	3	-----	1	-----	1	1	-----	-----	-----	-----	-----
Not reported and irregular....	93	7	13	12	10	15	8	10	6	10	2

Owing to the fact that the beet harvest comes at a season of the year when the days are getting short, there is to some extent a daylight limitation to working hours. On the other hand, because of the danger from freezing, all possible haste must be used in harvesting the beets, for if left too long in the ground they may be caught by a hard frost so that they can not even be pulled. It is not uncommon for laborers' families to work by moonlight when the nights are fine and clear, and at times the lanterns of the "beeters" are seen in the fields in the evening. Usually, however, the day ends

by 6 p. m. The hour of beginning, as in thinning, was generally reported as 6 a. m., though in October daylight comes late. The increased pressure of work is shown by the fact that in spite of shortened daylight three-fourths of the children reported 9 hours or more in the field, as compared with the 69 per cent who reported such hours in connection with hoeing. Thirty-one children under 8 years of age reported working at pulling and topping for 9 hours or more a day. The largest single group, one-third of all the children working at the process, reported 10 hours; about one-eighth reported 11 hours; and a few—between 2 and 3 per cent—reported 12 to 13 hours a day.

A somewhat larger proportion of the farm owners' children who worked at this process spent 9 hours or more a day pulling and topping than did the children of laborers or of farm renters, 81 per cent, as compared with 73 and 71 per cent, respectively. But again, as in both spring and summer work, it was contract laborers' children who worked the longest day. Four per cent of them reported working 12 hours or more, whereas only 1 owner's child worked as long as 12 hours. Some of the children who were reported as working short hours worked before and after school. Two children, a 13-year-old boy and an 11-year-old girl topped beets from 5.30 to 7.45 in the morning, and after school from 4.45 to 6 o'clock. They expected to spend a little over 7 weeks at the harvest work.

Since pulling and topping were in progress at the time the Children's Bureau study was made, it is impossible to give any exact figures on the length of time during that season spent by the children at the process. The work began the 1st of October and lasted until the middle of November, though most of it was finished by the end of the first week in November. It is probable, therefore, that for most of the laborers' children the duration of work was from 4 to 5 weeks. The children of men who rented or owned farms were likely to work less time than the children of contract laborers.

TABLE XIII.—Daily hours pulling and topping, by economic status of family; children between 6 and 16 years of age working in beet fields: Colorado group.

Daily hours pulling and topping.	Children between 6 and 16 years of age working in beet fields.							
	Total		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	1,073	.....	774	.....	164	.....	135	.....
Did not work pulling and topping.....	114	.....	78	.....	21	.....	15	.....
Worked pulling and topping.....	959	100.0	696	100.0	143	100.0	120	100.0
Less than 4 hours.....	31	3.2	18	2.6	8	5.6	5	4.2
4 hours, less than 5.....	5	.5	4	.6	1	.7	1	.8
5 hours, less than 6.....	3	.3	2	.3	1	.7	1	.8
6 hours, less than 7.....	10	1.0	8	1.0	2	1.4	2	1.7
7 hours, less than 8.....	36	3.8	28	4.0	4	2.8	4	3.3
8 hours, less than 9.....	71	7.4	55	7.9	11	7.7	5	4.2
9 hours, less than 10.....	233	24.3	165	23.7	30	21.0	28	23.3
10 hours, less than 11.....	330	34.4	230	33.0	57	39.9	43	35.8
11 hours, less than 12.....	121	12.6	91	13.1	15	10.5	15	12.5
12 hours, less than 13.....	23	2.4	22	3.2	.....	.....	1	.8
13 hours, less than 14.....	3	.3	3	.4	.....	.....	.....	.....
Not reported and irregular	93	9.7	70	10.1	15	10.5	8	6.6

Number of seasons at work.

Under the strain of long hours at exacting physical labor, extending over a period of weeks, many of the children in these families worked season after season during some of the most formative years of their lives. Table XIV shows the number of seasons which the children of different ages had worked.

TABLE XIV.—Number of seasons in beet fields,¹ by age of child; children between 6 and 16 years of age: Colorado group.

Age of child.	Children between 6 and 16 years of age.						
	Total.	Did not work in beet fields.		Number of seasons in beet fields. ¹			
				1		2	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	1,400	327	23.4	305	21.8	327	23.4
6 years, under 7.....	148	133	89.9	12	8.1	3	2.0
7 years, under 8.....	148	92	62.2	44	29.7	10	6.8
8 years, under 9.....	145	54	37.2	58	40.0	27	18.6
9 years, under 10.....	149	22	14.8	55	36.9	66	44.3
10 years, under 11.....	183	12	6.6	52	28.4	86	47.0
11 years, under 12.....	124	8	6.5	22	17.7	48	38.7
12 years, under 13.....	171	1	.6	33	19.3	38	22.2
13 years, under 14.....	137	1	.7	13	9.5	28	20.4
14 years, under 15.....	128	4	3.2	11	8.7	15	11.9
15 years, under 16.....	69	.....	.....	5	7.2	6	8.7

¹ Includes season of 1920.

TABLE XIV.—*Number of seasons in beet fields, etc.*—Continued.

Age of child.	Children between 6 and 16 years of age.							
	Number of seasons in beet fields.							
	3		4		5		6	
	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Total.....	159	11.4	119	8.5	86	6.1	37	2.6
6 years, under 7.....								
7 years, under 8.....	1	.7	1	.7				
8 years, under 9.....	2	1.4	2	1.4	2	1.4		
9 years, under 10.....	5	3.4					1	.7
10 years, under 11.....	22	12.0	8	4.4	3	1.6		
11 years, under 12.....	30	24.2	9	7.3	5	4.0	1	.8
12 years, under 13.....	44	25.7	29	17.0	19	11.1	6	3.5
13 years, under 14.....	28	20.4	28	20.4	21	15.3	9	6.6
14 years, under 15.....	22	17.5	27	21.4	21	16.7	11	8.7
15 years, under 16.....	5	7.2	15	21.7	15	21.7	9	13.0

Age of child.	Children between 6 and 16 years of age.							
	Number of seasons in beet fields.							
	7		8		9		Not reported.	
	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Total.....	25	1.8	9	0.6	3	0.2	3	0.2
6 years, under 7.....								
7 years, under 8.....								
8 years, under 9.....								
9 years, under 10.....								
10 years, under 11.....								
11 years, under 12.....							1	.8
12 years, under 13.....								
13 years, under 14.....	7	5.1			1	.7	1	.7
14 years, under 15.....	11	8.7	4	3.2				
15 years, under 16.....	6	8.7	5	7.2	2	2.9	1	1.4

One-third of the working children had begun to work when they were 8 years of age or younger—4 per cent of them when only 6 years of age. It was not surprising, therefore, to find that, although the oldest children included in the study had not reached their sixteenth birthday, a large number of them were reported as having worked in the beet fields at least 5 seasons, some of them as many as 6, 7, 8, or even 9. Comparatively few were doing their first season's work—only 28 per cent, even when the youngest working children are included. Fewer still among those from 10 to 15 years of age, in fact only 17 per cent, were working in the beet fields for the first time. The majority of the children of these ages had been working at least 3 years and one-fifth of them had worked for 5 seasons or more, including 3 of the 171 10-year-old children, but well over half of the 15-year-old group.

Amount of work per child.

It was impossible to estimate satisfactorily how much work a child did in a day. Parents and children worked together, and the acreages completed at the end of the day represented the labor of adults and children of different ages and working ability. In families where the parents were able to give what seemed to be a careful and intelligent estimate of their children's work the average amount blocked and thinned in a day per child was about one-third of an acre;²² the amount hoed daily averaged two-thirds of an acre;²³ while on the average only one-fourth of an acre could be pulled and topped by a child in a day.²⁴

One little Russian-German girl gave the following account of her family's fall work. The working members of this family besides the father and the mother (who left the field early to do the cooking) were Amelia, aged 9, her sister Mina, aged 12, and 7-year-old Albert. Working together they pulled and topped 37½ acres in 28 working days. The father working alone, the mother aided by Mina, and Amelia with the help of Albert arrived at the same time at the end of their respective beet rows, so that the daily acreage of 1.3 acres was divided equally among three teams, the little girl and the boy of 7 between them doing the work on something over two-fifths of an acre.

The statement made by local observers that when a child arrives at the age of 7 the family may contract for 5 additional acres is borne out to some extent by the average amount of work per child during the season as calculated on the basis of the acreage worked and the number of workers in the families covered in the present study.²⁵

In 291 families of beet-field laborers whose acreage was the same throughout the season each working child cared for an average of 5.9 acres, or over three-fourths of the average amount taken care of by an adult, which, for these families, was 7.6 acres.²⁶ It is not known whether or not each adult and each child in these families worked in all the processes, but the figures represent the average number of acres on which a child and an adult, respectively, did all the hand-work during the season. For the comparatively few (72) laborers' families reporting that at least the mother and all the children under 16 who worked had actually worked on all the processes, it was found that the average acreage cared for by a child during the season was 5.5, while that cared for by an adult was 7.9. It may

²² The reports of 73 families were used in this estimate.

²³ The reports of 142 families were used in this estimate.

²⁴ The reports of 138 families were used in this estimate.

²⁵ The average acreage worked by children and adults is calculated by the method of least squares from data giving the total acreage, and the number of adults and children at work upon it. For this purpose only those cases are taken in which, so far as information was available, all those who worked had worked at all processes.

²⁶ The average acreage per adult is usually estimated as 10. The fact that many of the working adults in these families were mothers who on account of housework and cooking may have worked shorter hours than other adults has the effect of lowering the average.

have taken a child considerably longer to do the work, acre for acre, than a man or woman, but his record of accomplishment at the end of the season compares favorably with that of an adult.

EDUCATION OF CHILDREN.

The compulsory school attendance law and its enforcement.

Difficulty had been experienced in Weld and Larimer Counties in enforcing the compulsory school attendance law in cases in which parents wished to keep their children out of school for work in the beet fields. The Colorado law²⁷ provides that every child between the ages of 8 and 16, unless mentally or physically incapacitated, must attend school, but that a child may leave school at 14 years of age if he has completed the eighth grade, or he may leave at 14 without completing the eighth grade if his earnings are necessary to his own or his parents' support, or if it is for his own "best interests."²⁸ Attendance is required during the entire school session. The spring work on the beet crop does not usually necessitate loss of time from school, at least if the families are resident in the beet-growing area, for the schools are ordinarily closed by the 1st of June. Children in nonresident families, however, especially those from more or less distant cities, have to leave school some time before the end of the term in order to get settled in the beet-growing district before the actual work begins. The fall process obliges all the children who work at it, whether resident in the district or not, to be absent from school from four to six weeks in October and early November.

In Colorado, the entire responsibility for the enforcement of the school attendance law is lodged in a local board in each district. The county court may be appealed to on failure of persons to comply with the law, but the court may not act to compel the attendance of a truant unless the local officers have acted without avail. Under this system there are likely to be as many different standards of enforcement in the county as there are school districts. Especially in rural districts the small unit of administration makes trouble. Everyone is acquainted with everyone else in the community, so that members of the school board honestly desirous of enforcing the law to the letter find themselves in an embarrassing position when their friends and neighbors are the offenders. When the members of the board and the attendance officer are, as in the beet-growing counties, beet farmers themselves, in some cases keeping their own children out of school for work on the beet crop or hiring the families of beet laborers

²⁷ Mills' Annotated Statutes, Revised Edition, 1912, secs. 639, 640.

²⁸ The local or county school superintendent on application of the parent may excuse the child for his own "best interests."

to do their handwork, it is exceedingly difficult to get any action on reports of truancy made by teachers and school officials. One attendance officer was reported to have kept notices to be served on parents in his pocket until the beet harvest was over. In another district no attendance officer had been appointed. Unless some member of the community filed a complaint against the school board no action to provide an attendance officer could be taken. In one county the warnings of local attendance officers had proved so ineffectual that the teachers reported cases directly to the county superintendent, who in turn reported them to the sheriff. If the sheriff's notice was not heeded, the parent was brought into court and fined.

Advantage was also taken of the provision in the law requiring a parent to return a truant child to school within five days of the notice served by the attendance officer. It frequently happened that parents would not send their children back to school until the fifth day; would take them out again after a few days; and would not return them until notice had been served again and five days had again elapsed, repeating the subterfuge throughout the harvest. One judge did in a measure curb this scheme by allowing only five days of grace in all, not five for each offense.

So far as the law itself is concerned, such changes as are needed to prevent evasions of this sort should be made. It is beginning to be recognized also that a larger unit of administration, in which the personal element does not play so large a part, is necessary for the effective enforcement of the school attendance law in agricultural areas.

Adapting the school program to the demands of the local crop has also been advocated as a means of meeting the problem, and in a number of districts in Weld and Larimer Counties this expedient had been adopted to permit children to aid their parents in the beet harvest and at the same time to receive a normal amount of schooling. Some of the schools, in rural districts gave a "beet vacation" during the harvest season, beginning the fall term earlier than the customary September 1, and dismissing the entire school during the vacation, which lasted two or three, and occasionally four, weeks. In three of the largest beet-sugar centers of Weld County, each having a sugar factory and a large settlement of resident beet-field workers, the experiment of holding an extra session during the summer had been tried, with the understanding that those who had attended the summer term (which was not obligatory) could be excused in the fall season for a corresponding period, which was in one town, eight weeks; in another seven; and in a third, six weeks. This plan had been in effect three years in one Weld County town and several years in another, so that in those towns it had become

customary for children who expected to be out in the fall for the beet harvest to attend the summer session. A third town in Weld County had experimented with the summer session in 1919, but had given it up after one season. In Larimer County only one town had tried the summer school, having held a six weeks' session each summer for three years.

Probably the problem of school attendance—undoubtedly a perplexing one to local officials in all beet-raising districts—has nowhere been more earnestly considered than in these two Colorado counties. Hence, the findings in the present study may be regarded as representing conditions above the average rather than those typical of beet-growing sections throughout the country.

School attendance of children in the families visited.

The great majority of the children included in the study had entered school at 6 years of age, the usual age for beginning even when attendance is not required, as by the Colorado school attendance law, until the child is 8 years of age. Only 184 of the 1,400 children visited who had reached their sixth birthday but were not yet 16 years old were not enrolled in school, and all except 19 of these were under 8 or were 14 years of age or over. Even of the 15-year-old children five-sixths were still in school. No doubt both inability to get winter work in the vicinity and slow progress in school, which makes it impossible for many children to complete the grammar grades in the standard number of years, are contributing factors in keeping children in school after they are 14 years of age, in spite of the exemptions permitted by the law.

To secure records of school attendance even for the children of resident families covered by the study was difficult and often impossible, especially in cases where children had attended more than one school during the term. Complete records from teachers' registers for the school year preceding the inquiry were finally secured for 796 children. None of these were migratory laborers' children, whose school attendance is likely to be of even shorter duration than that of the resident beet-field workers.

Even among this group of resident children, however, more than two-fifths of those who had attended schools that had neither a "beet vacation" nor a summer session had been in school less than 80 per cent of the term, and the average attendance was only 79.3 per cent of the total possible days. They had therefore lost on an average one-fifth of their schooling for the year. Children of contract laborers had decidedly less schooling than beet-growers' children. Considerably over half the former had been present less than 80 per cent of the session, and one-fifth of them had not been in attendance so much as three-fifths of the time, whereas only one-fourth of the growers' children had missed as much as a fifth and only 6 per cent as much as

three-fifths of the term. In other words, contract laborers' children attended school on an average of only 74 per cent of the term, losing one-quarter of their school year, while the tenants' children attended on an average 91.5 per cent of the term, and owners' children 88.7 per cent, these two groups losing only about one-tenth of the school year. As the average school term in the schools attended by these children was 163 days, exclusive of holidays, the contract laborers' children had on an average only 120 days of schooling during the year.

TABLE XV.—Per cent of attendance, by economic status of family and type of school attended; resident children between 6 and 16 years of age attending school: Colorado group.

Economic status of family and type of school attended.	Children between 6 and 16 years of age attending school specified per cent of school term.						
	Total.	Less than 50.		50 less than 60.		60 less than 70.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Children who attended neither summer school nor beet-vacation school.....	312	27	8.7	19	6.1	36	11.5
Laborer.....	194	23	11.9	16	8.2	32	16.5
Tenant farmer.....	55	3	5.5	3	5.5	1	1.8
Farm owner.....	63	1	1.6			3	4.8
Children who attended summer school: ²	381			5	1.3	12	3.1
Laborer.....	307			3	1.0	7	2.3
Tenant farmer.....	48					1	
Farm owner.....	26			2		4	
Children who attended beet-vacation school ⁴	103	2	1.9	7	6.8	13	12.6
Laborer.....	76	2	2.6	6	7.9	13	17.1
Tenant farmer.....	11						
Farm owner.....	16			1			

Economic status of family and type of school attended.	Children between 6 and 16 years of age attending school specified per cent of school term.							
	70 less than 80.		80 less than 90.		90 less than 100.		100 and over. ⁵	
	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Children who attended neither summer school nor beet-vacation school.....	54	17.3	78	25.0	90	28.8	7	2.2
Laborer.....	36	18.6	44	22.7	39	20.1	3	1.5
Tenant farmer.....	12	21.8	19	34.5	16	29.1	1	1.8
Farm owner.....	6	9.5	15	23.8	35	55.6	3	4.8
Children who attended summer school: ²	25	6.6	95	24.9	185	48.6	59	15.5
Laborer.....	19	6.2	75	24.4	153	49.8	50	16.3
Tenant farmer.....	4		14		23		6	
Farm owner.....	2		6		9		3	
Children who attended beet-vacation school ⁴	27	26.2	19	18.4	33	32.0	2	1.9
Laborer.....	24	31.6	16	21.1	13	17.1	2	2.6
Tenant farmer.....	3		1		7			
Farm owner.....			2		13			

¹ Not shown where base is less than 50.

² Includes 1 child for whom per cent of attendance was not reported.

³ Excludes 93 children attending summer school for whom the number of days attended was not reported.

⁴ Excludes 6 children who also attended summer school. These were classed with those attending summer school.

⁵ See p. 42. Excludes 171 children who were never in school, 13 who had left school, and 327 for whom no information in regard to school attendance was secured.

Not all this absence is due to the work which the children do in the beet fields. It is significant, however, that according to their parents' statements almost one-fourth of the school children included in the survey for whom absence was reported had missed more than four school weeks from the regular school session during the school year preceding the inquiry in order to help with the beet crop.²⁹ Three times as many contract laborers' as beet farmers' children in proportion to their numbers had stayed away from school more than four school weeks for work in the beet fields. The larger acreages worked by the contract laborers lead to heavier demands upon the school time of the children. Not only do farmers' children work exclusively on the home farms, so that their work is more quickly completed, but since all the harvest work comes during the regular school session, their parents find it more difficult than do contract laborers to keep them out of school for the work unless the school is one which has made some special arrangement for the children who expect to work in the beet harvest. Laborers' children, coming as a rule from outside the school district, are able in most cases to escape the vigilance of school authorities.

As mentioned above, one of the compromises adopted in some districts to improve school attendance and at the same time to allow children to work during the beet harvest was the "beet vacation," lasting from two to four weeks, the time being compensated for by the earlier opening of school. The vacation, however, was seldom long enough to allow the children of the laborers as much time as they needed for their contract work, and school officials in the areas studied complained that attendance was very small for a week or more before and after the vacation. Judged also by the school records of the 103 children included in the study who attended schools giving the "beet vacation," the expedient was not a satisfactory one in improving school attendance. The average percentages of attendance for the children attending schools giving "beet vacations"—90 per cent for owners' children, 88.6 per cent for farm renters', and 76.8 per cent for the children of contract laborers—show practically no improvement over those for children attending schools with only the regular session, though many of the latter also stayed out for harvest work. (See Table XV.) Almost half (47.5 per cent) the children attending schools giving "beet vacations" missed a fifth or more of the education provided for them in the public schools of the two counties.

²⁹ Judge Herbert M. Baker, of Weld County, in "The farm and the school," Colorado State Teachers College Bulletin, September, 1918, p. 24, makes the following statement: "The greatest causation of irregular attendance among children of all nationalities (in Weld County) is the withdrawal of children to work upon the farm."

Schools holding a summer session showed a decided improvement in the percentage of total attendance for the year over schools making no provision for beet-field work or those which closed for only a brief period during the height of the harvest. In the families included in the study, 474 children had availed themselves of this opportunity for increased schooling. Complete attendance records, however, were secured for only 381 children. For these the percentage of attendance was 90 or more for over three-fifths and less than 80 for only 11 per cent. A number of children who had not taken their full allowance of days out in the fall had an attendance record of more than 100 per cent. Only 4 per cent of the children going to summer school, in contrast to the 33 and 23 per cent, respectively, of children having only the regular term, or a regular term which allowed a "beet vacation," had received not more than 120 days of schooling during the year preceding the inquiry. Laborers' children attending summer schools, moreover, had attendance records quite as good as those of the beet farmers' children. In striking contrast, proportionately more than twice as many of the laborers' children who had not attended summer schools, as compared with farm owners' children who had not done so, had been in school less than four-fifths of the term.

Retardation of children in the families visited.

Irregular attendance is one of the most important factors in causing slow progress in school. An effort was made to ascertain to what extent the children in the families visited had reached the grades regarded as normal for their years in spite of the handicap which their frequent absences imposed or to what extent they had failed to do so and might be considered retarded. A statement of the age and grade of each child was secured from the families.

A child usually enters the first grade when he is 6 years of age and is expected to advance a grade each year, being 7 when he enters the second grade, 8 when he enters the third, and so on. In determining retardation, however, a more conservative standard has been generally adopted, according to which a child is regarded as having made "normal" progress if he is 6 or 7 years of age in the first grade, 7 or 8 in the second, and 8 or 9 in the third; and is retarded only if he is 8 years of age or older when he enters the first grade, 9 when he enters the second, and so on.

Measured by even this standard, approximately three-fifths of the 778 resident children between 8 and 16 years of age for whom records were secured were retarded in school.⁵⁰

⁵⁰ The records of children less than 8 years of age were excluded, since, according to the standard adopted, a child younger than 8 is not considered retarded.

Of those who had attended rural schools during the school year preceding the study, 62 per cent were over age for their grade; of those attending city³¹ schools, 57 per cent were retarded.

TABLE XVI.—Comparison of retardation of resident children between 8 and 16 years of age in beet-field workers' families, with the average rate of retardation¹ of children in 80 cities.

Age of child.	Resident children between 8 and 16 years of age whose school attendance was reported.						Average rate of retardation for specified age in 80 cities.
	Attending city schools.			Attending rural schools.			
	Total.	Retarded.		Total.	Retarded.		
		Number.	Per cent. ²		Number.	Per cent. ²	
Total.....	394	224	56.9	384	240	62.5	.....
8 years, under 9.....	53	15	28.3	46	7	10.53	.....
9 years, under 10.....	65	24	36.9	48	20	15.52	.....
10 years, under 11.....	62	30	48.4	64	37	21.57	.....
11 years, under 12.....	47	29	.....	47	30	26.88	.....
12 years, under 13.....	59	41	69.5	59	39	32.35	.....
13 years, under 14.....	55	39	70.9	50	42	36.54	.....
14 years, under 15.....	35	28	.....	49	45	37.78	.....
15 years, under 16.....	18	18	.....	21	20	37.27	.....

¹ Proportions of retarded children from a distribution of 1,142,179 pupils in 80 cities, 1917-18. Unpublished figures furnished by the U. S. Bureau of Education.
² Not shown where base is less than 50.

TABLE XVII.—Retardation, by economic status of family and type of school attended; resident children between 8 and 16 years of age in beet-field workers' families: Colorado group.

Economic status of family.	Resident children between 8 and 16 years of age whose school attendance was reported.					
	Attending city schools.			Attending rural schools.		
	Total.	Retarded.		Total.	Retarded.	
		Number.	Per cent. ¹		Number.	Per cent.
Total.....	394	224	56.9	384	240	62.5
Laborer.....	329	189	57.4	222	157	70.7
Tenant farmer.....	40	18	.....	81	37	45.7
Farm owner.....	25	17	.....	81	46	56.8

¹ Not shown where base is less than 50.

The proportion of laborers' children retarded was higher than that of beet growers' children, more than seven-tenths of those attending rural schools being below normal grades as compared with 46 and 57

³¹ The definition of city—a community with a population of 2,500 or more—used in "Statistics of City School Systems," U. S. Bureau of Education Bulletin, 1920, No. 24, p. 7, was adopted in classifying the schools in this study in order that the retardation figures for city schools might be comparable with figures furnished by the U. S. Bureau of Education.

per cent, respectively, of tenant farmers' and farm owners' children. Even those laborers' children who had had the advantage of city schools had as large a percentage of retardation as had the farm owners' children in rural schools. The social background of the Colorado beet-field laborers' children is not essentially different from that of the farm owners' and tenant farmers' children who work in the beet fields, the chief difference among the economic groups affecting school progress being the less regular school attendance of the laborers' children.

TABLE XVIII.—Retardation, by age and type of school attended; resident children between 8 and 16 years of age in beet-field workers' families: Colorado group.

Age of child and type of school attended.	Resident children between 8 and 16 years of age whose school attendance was reported.		
	Total.	Retarded.	
		Number.	Per cent. ¹
Total.....	778	464	59.6
8 years, under 9.....	99	22	22.2
9 years, under 10.....	113	44	38.9
10 years, under 11.....	126	67	53.2
11 years, under 12.....	94	59	62.8
12 years, under 13.....	118	80	67.8
13 years, under 14.....	105	81	77.1
14 years, under 15.....	84	73	86.9
15 years, under 16.....	39	36	92.3
Attended schools having neither summer sessions nor beet vacation.....	247	151	61.1
8 years, under 9.....	43	12	27.9
9 years, under 10.....	35	15	42.9
10 years, under 11.....	42	24	57.1
11 years, under 12.....	23	14	60.9
12 years, under 13.....	38	20	52.6
13 years, under 14.....	28	23	82.1
14 years, under 15.....	26	23	88.5
15 years, under 16.....	12	11	91.7
Attended schools having a summer session.....	439	248	56.5
8 years, under 9.....	40	5	12.5
9 years, under 10.....	65	22	33.8
10 years, under 11.....	70	31	44.3
11 years, under 12.....	58	34	58.6
12 years, under 13.....	69	42	60.9
13 years, under 14.....	67	51	76.1
14 years, under 15.....	46	39	84.8
15 years, under 16.....	24	24	100.0
Attended schools having a beet vacation.....	92	65	70.7
8 years, under 9.....	16	5	31.3
9 years, under 10.....	13	7	53.8
10 years, under 11.....	14	12	85.7
11 years, under 12.....	13	11	84.6
12 years, under 13.....	11	9	81.8
13 years, under 14.....	10	7	70.0
14 years, under 15.....	12	11	91.7
15 years, under 16.....	3	3	100.0

¹ Not shown where base is less than 50

No retardation figures for children attending rural schools are available which would be strictly comparable with the figures secured for the children in the present study who attended rural schools.

More than half the child beet-field workers in resident families attended city schools, however, and for these 394 children it is possible to make comparisons, showing that the proportion below the grades which were normal for their ages was considerably larger than the average. At average rates of retardation³² only 100 instead of 224 children would have been retarded—that is, approximately only one-fourth—instead of considerably more than one-half. At every age period the proportion of retarded children in these families is strikingly higher than the average. At the age of 15 every child was retarded, whereas the average rate of retardation for 15-year-old school children is 37 per cent. Possibly the provision of the Colorado school attendance law which keeps children in school until they are 16 unless they have completed the eighth grade may account for some of this difference, since in some States children are permitted to leave school at 14 without completing the elementary grades, and the duller pupils, those most likely to be retarded, are likely to drop out as early as the law allows, leaving only the brighter 15-year-old children in school. But further explanation of the high rate is probably to be found in the fact that the older children have been kept out of school year after year to help on the beet farms.

Weld and Larimer County schools, it will be recalled, had for several years been giving especial consideration to the problem of the beet-field worker, and high as the proportion of retarded pupils was found to be among the children included in the present study, it was lower than that found in other beet-growing counties in the State. In a city school in another northern county, for example, 40 children between 8 and 16 years of age were reported as beet-field workers. All except 5 of these children, most of whom—like the Weld and Larimer County beet-field workers—were Russian-Germans, were below the grades which, according to their years, they should have reached. In a city school in a southern county attended chiefly by Mexican children, who constitute an especially difficult problem, 46 out of the 49 children between 8 and 16 years of age had fallen behind in their school work from 1 to 8 years.

Whether or not the provision of summer sessions for beet-field workers in lieu of exacting attendance throughout the regular school session has succeeded in reducing retardation in Weld and Larimer County schools is impossible to determine. According to Table XVIII, the proportion of retarded children attending schools having a summer session is indeed somewhat smaller than that of children who attended schools having only the regular session; but the difference, only 5 per cent, is hardly significant.

³² Average rates of retardation for children of each age between 8 and 16 based on the proportions of retarded children from distribution of 1,142,179 pupils in 80 cities, 1917-18. Unpublished figures furnished by the U. S. Bureau of Education.

The summer session has been in existence too short a time to prove whether or not it may be successful as an expedient permitting children to help on the beet crop and at the same time secure a normal amount of schooling. The opinions of local school authorities differ on this point. Whether or not the summer session can ultimately enable the "beeter's" child to make progress in school comparable with that of the child whose school session is not interrupted by work in the beet field seems to depend to a great extent on how carefully the school holding the summer session is organized. A child, together with other children who expect to work on the beet harvest in the fall, takes in the summer session the first six or seven weeks' work of the regular school term. He then enters school in September with all the children, for he does not need to stay out for the beet-field work until October. Unless he is to repeat the work which he has done in the summer session, an obvious waste of time, he must be put in a special class and there given the same instruction that the nonworking children will receive while he is out for the pulling and topping, so that when he returns to school he may enter the class with them. This arrangement requires extra teachers for the beet-field workers, thereby increasing greatly the cost per pupil. Moreover, it is difficult, according to some local school officials, to secure teachers who are willing to work during the summer and take a vacation in October. In addition to administrative difficulties, the plan has other drawbacks. The beet-field worker is separated from the children in the school who do not work on the beet farms for fully a third of the school term. Such a segregation emphasizes social and economic differences between the children of American and those of foreign parentage whose isolation is great under the best of circumstances, and who are particularly in need of association in the schools with children from English-speaking families and families in which American standards prevail. Finally, in thus adapting the school session to meet the needs of the sugar-beet industry there is always the danger that the claims of the industry will come to be considered superior to those of the children.

Even though the sentiment of a community may be in favor of the summer school, until summer sessions are actually available there rests upon the community the responsibility of enforcing the present school attendance law to the letter. Lax enforcement is costly to the community as well as to the child. Many school districts fail to get the returns on the money expended for educational purposes because absences result in school equipment and school buildings not being used to their full capacity. Thus, in the school year 1917-18, Colorado virtually lost \$3,036,765, almost a third of its entire school

appropriation, because the average attendance for the year was one-third less than the average school term provided.³³

Supplementary studies of school attendance and retardation.

Study of records of resident beet-field workers in rural schools.— Since the majority of the children covered in the schedule study attended city schools and the total number moreover was small, a further study of school attendance and retardation among children working in the beet fields was made through questionnaires³⁴ sent to teachers of rural and village schools in beet-growing districts. Ninety-seven of the 147 school districts in Weld and Larimer Counties and 7 districts in Logan, an adjoining county, were canvassed.

The teachers were asked for attendance records for the period covering the beet harvest, including every child whose name appeared on their registers from the opening of school in 1920 to November 15 of the same year. This date was selected as marking the close of the harvest season. Unfortunately, as it appeared later from statements sent in by the teachers, a good many beet-field workers did not enter school at all until after November 15. While it is impossible to state the number of these children, those mentioned by the teachers on their own initiative amounted to nearly 6 per cent of the total number of child workers on the registers, and it seems probable that there were more. The attendance figures for the children working on beets may be considered conservative, therefore, as the late entrants, had they been included, would have reduced the attendance percentage considerably.

Table XIX shows the number of children in all three counties for whom records were received, classified according to whether or not they worked on the beet crop. Children who worked before and after school hours only were not considered beet-field workers and are not included, though evidence indicates that there were numbers of such children doing a considerable amount of beet-field work.³⁵

³³ Statistics of State School Systems, 1917-1918, U. S. Bureau of Education, Bulletin 1920, No. 11, pp. 14, 16. Washington, 1920.

³⁴ See p. 102.

³⁵ Teachers told, for instance, of children rushing in as the bell rang saying that they had had to top a certain number of rows of beets before they could come to school and had had to run to get there on time, and of others, who, wakened early and sent out to the beet fields to work until school time, would sometimes fall asleep at their desks.

TABLE XIX.—Comparison of school attendance of children working in beet fields with that of children not working in beet fields during the autumn of 1920 (up to November 15), by county; pupils in schools in Weld, Larimer, and Logan counties, Colo.¹

County.	Total number of children reporting days present and days absent.	Total possible days.	Children working in beet fields.	
			Number reporting.	Possible days.
Weld.....	2,346	110,898	444	21,201.5
Larimer.....	1,338	62,092	277	12,960.0
Logan.....	397	19,937	156	7,750.0

County.	Children working in beet fields.					
	Days present.		Days absent.		Days absent for beet work.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent of total absence.
Weld.....	13,418.5	63.3	7,783.0	36.7	6,613.5	85.0
Larimer.....	9,220.5	71.1	3,739.5	28.9	3,283.0	87.8
Logan.....	2,825.0	36.5	4,925.0	63.5	4,546.5	92.3

County.	Children not working in beet fields.					
	Number reporting.	Possible days.	Days present.		Days absent.	
			Number.	Per cent.	Number.	Per cent.
Weld.....	1,902	89,696.5	82,968.5	92.5	6,728.0	7.5
Larimer.....	1,061	49,132.0	46,067.5	93.8	3,064.5	6.2
Logan.....	241	12,187.0	10,796.5	88.6	1,390.5	11.4

¹ Includes the pupils from 30 schools in Weld, 18 in Larimer, and 7 in Logan County for whom school attendance was reported.

In the 30 rural school districts in Weld County which returned questionnaires, sufficiently complete attendance records were furnished for 2,346 children who had enrolled up to November 15.²⁶ The attendance of the children working in the beet fields, as Table XIX shows, was strikingly less than that of those who did not work. The percentage of absence for the former was five times as great as for the latter group. The beet-field workers in these school districts had been absent from school from 1 to 40 days. Up to November 15 they had missed, on an average, 17½ days out of a possible 45, and in 9 districts they had been absent more often than they had been present. Eighty-five per cent of the absence of beet-field working children in these schools was reported as due to work in the beet harvest, and only 15 per cent had resulted from miscellaneous causes. That

²⁶ In each case in which there was any doubt as to the completeness or accuracy of the attendance record the attendance was counted as "not reported."

is, 15 out of the average 17½ days of absence were directly chargeable to the exigencies of the beet harvest. Five of the schools had, in addition, been closed for a "beet vacation" of from 2 to 4 weeks, which had affected 18 per cent of the children. But a large proportion (37.3 per cent) even of these children had had absences due to the beet harvest, showing, as did the records for the children in the schedule study who had attended schools giving "beet vacations," that the time permitted was too short for the fall work. The great majority (two-thirds) of the beet-field workers who had enrolled in these schools were residents of the district; about three-tenths had come from near-by towns for the harvest work; only a few were from outside the county.

In Larimer County the situation was similar. Eighteen school districts sent in attendance records for 1,338 children, approximately one-fourth of whom were children who worked in the beet fields. As in Weld County, the workers were reported absent almost five times as often as the children who had not helped with the beet harvest, and again, the greater part of the absence among the workers, amounting to 88 per cent of the total, was explicitly stated to have been due to work on the beet crop; this, too, in spite of the fact that well over a third of the children had had "beet vacations." In Larimer County, as in Weld, approximately two-thirds of the workers thus avoiding school attendance were residents of the district where they had enrolled in school, while the others with few exceptions came from other school districts in the county.

The records for Logan County but add to the evidence that children working in the beet fields are not enjoying the same opportunity to receive a common-school education as the children in the same localities who are not helping in the beet fields. An even larger proportion of the children in the seven school districts located in beet-raising areas in Logan County were beet-field workers than in the other two counties, amounting to 40 per cent of the children for whom information was furnished. These children were out of school practically two-thirds of the time up to November 15, and more than 9 absences out of 10 among them were due to harvest work. As Table XIX indicates, in the schools reporting they had been absent over five times as much as children who did not help with the beet harvest. Less than a fifth of them were not permanent residents of the district where they were supposed to be going to school.

Among more than 3,000 children between 8 and 16 years of age in these rural and semirural schools almost two-fifths were below the grades which children of their years should have reached.³⁷ Many were from 2 to 7 years below the very conservative standard regarded as normal.

³⁷ See Table XX, p. 50.

TABLE XX.—Comparison of retardation of children working in beet fields with that of children not working in beet fields, by county; children between 8 and 16 years of age in schools in Weld, Larimer, and Logan Counties, Colo.

Employment of child, and county.	Children between 8 and 16 years of age.										
	Total.	Retarded.						Normal.		Advanced.	
		Total.		1 year.		2 years and over.		Num- ber.	Per cent.	Num- ber.	Per cent.
		Num- ber.	Per cent.	Num- ber.	Per cent.	Num- ber.	Per cent.				
Total.....	3,122	1,203	38.5	679	21.7	524	16.8	1,714	54.9	203	6.5
Worked in beet fields.....	¹ 829	534	64.4	238	28.7	296	35.7	286	34.5	8	1.0
Did not work in beet fields.....	¹ 2,293	669	29.2	441	19.2	228	9.9	1,428	62.3	195	8.5
Weld.....	1,794	603	33.6	353	19.7	250	13.9	1,055	58.8	136	7.6
Worked in beet fields.....	426	245	57.5	101	23.7	144	33.8	175	41.1	6	1.4
Did not work in beet fields.....	1,368	358	26.2	252	18.4	106	7.7	880	64.3	130	9.5
Larimer.....	1,030	476	46.2	255	24.8	221	21.5	510	49.5	42	4.1
Worked in beet beet fields.....	¹ 280	202	72.1	95	33.9	107	38.2	75	26.8	2	0.7
Did not work in beet fields.....	¹ 750	274	36.5	160	21.3	114	15.2	435	58.0	40	5.3
Logan.....	298	124	41.6	71	23.8	53	17.8	149	50.0	25	8.4
Worked in beet fields.....	123	87	70.7	42	34.1	45	36.6	36	29.3	.....	.....
Did not work in beet fields.....	175	37	21.1	29	16.6	8	4.6	113	64.6	25	14.3

¹ Includes 1 child for whom grade was not reported.

The beet-field workers of every age,³⁸ as Table XXI shows, were more retarded than the children who did not work on the beet crop. From one and a third times to considerably more than twice as many workers as nonworkers in proportion to their numbers were over age for their grades.

³⁸ It is not practicable to compare the retardation for workers and nonworkers of all ages between 8 and 16 years, since the proportion of older children (among whom retardation is invariably greater than among the younger) is larger in the workers' group. For the purpose of comparisons between workers in the different counties and nonworkers in the different counties, however, the totals for retarded, normal, and advanced children, classified by counties and according to whether or not they worked, are given in Table XX. It should be noted that the totals for the different counties, including both workers and nonworkers, are not comparable, since the proportion of workers is different in each county.

TABLE XXI.—Comparison of retardation of children working in beet fields with that of children not working in beet fields, by age of child; children between 8 and 16 years of age in schools in Weld, Larimer, and Logan counties, Colo.

Age of child.	Children-between 8 and 16 years of age.								
	Total.	Not working in beet fields.							
		Total.	Retarded.		Normal.		Advanced.		
			Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
Total.....	3, 122	1 2, 293	669	29. 2	1, 428	62. 3	195	8. 5	
8 years, under 9.....	476	395	61	15. 4	298	75. 4	36	9. 1	
9 years, under 10.....	489	390	65	16. 7	276	70. 8	49	12. 6	
10 years, under 11.....	476	356	86	24. 2	234	65. 7	36	10. 1	
11 years, under 12.....	440	337	97	28. 8	205	60. 8	35	10. 4	
12 years, under 13.....	436	286	98	34. 3	164	57. 3	24	8. 4	
13 years, under 14.....	360	246	104	42. 3	131	53. 3	11	4. 5	
14 years, under 15.....	293	183	86	47. 0	96	52. 4	1	0. 5	
15 years, under 16.....	152	1 100	72	72. 0	24	24. 0	3	3. 0	

Age of child.	Children between 8 and 16 years of age.								
	Total.	Working in beet fields.							
		Total.	Retarded.		Normal.		Advanced.		
			Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
Total.....	1 829	534	64. 4	286	34. 5	8	1. 0		
8 years, under 9.....	81	30	37. 0	49	60. 5	2	2. 5		
9 years, under 10.....	99	46	46. 5	50	50. 5	3	3. 0		
10 years, under 11.....	120	67	55. 8	52	43. 3	1	0. 8		
11 years, under 12.....	103	66	64. 1	36	35. 0	1	1. 0		
12 years, under 13.....	150	99	66. 0	51	34. 0	.....	.....
13 years, under 14.....	114	84	73. 7	29	25. 4	1	0. 9		
14 years, under 15.....	110	92	83. 6	18	16. 4	.....	.....
15 years, under 16.....	1 52	50	96. 2	1	1. 9	.....	.....

¹ Includes 1 child for whom grade was not reported.

Part of this difference may be due perhaps to the fact that the majority of those who did the handwork on the beet crop were of foreign parentage, whereas among the school children who did not work in the beet fields Americans predominated. In Weld County, for example, almost three-fifths of the working children were Russian-German and almost three-fifths of those not working on the beet crop were American. In the absence of figures for workers and nonworkers of similar cultural background it can not be determined to what extent the slow school progress of those who worked in the beet fields is due to the difficulties which children of foreign-born parents may have in using English, and to other unfavorable social and economic conditions surrounding the foreign born; and to what extent it is due to irregular school attendance resulting from field work. If, however, the child of foreign parentage is handicapped to an unusual degree from the beginning, it becomes all the

over the fact that in order to make both ends meet their wives were obliged to help in the beet fields, but for the most part field work for women was regarded in Colorado as a matter of course. In the 542 families studied were 454 mothers who were beet-field workers. The proportion of working mothers is influenced to some extent by the fact that some of the families were included in the study because the mother worked. By excluding families in which the mother but no children worked, the bias caused by the method of selection is corrected. Considering, therefore, only mothers in families in which children also worked in the beet fields, a total of 464 families, 395 mothers (85 per cent) worked on the beet crop. It would appear from the families studied that laborers' and tenants' wives were somewhat more likely to work in the beet fields than the wives of men owning their farms, inasmuch as only 77 per cent of the latter as compared with 86 per cent of the former had done so, but the difference is not striking. It should be remembered in this connection, however, that the Colorado farmer caring for his own beets has in most cases the same background and traditions as the contract laborer. Rather more marked are differences of practice in regard to field work for women among the different nationalities. For example, excluding families in which only the mother and not the children worked, 9 out of 10 of the Russian-German and German mothers were beet-field workers, whereas among native families—even though most of them were of foreign extraction—7 women out of 10, and among Mexicans born in Mexico, 6 out of 10, had worked in the beet fields.

Many of these women had worked for a number of years in the beet fields. The average number of seasons was about eight. The average for laborers' wives was not quite so high as for the women in the farm-renting or farm-owning families—approximately only seven seasons instead of nine or nine and a half. Farmers whose families take care of their own beet crop are usually those who have been the most ambitious and successful laborers, and those whose wives and children have worked hard for many years.

During the years when the mothers are bearing children they spend weeks at hard manual labor, working in some instances up to the very day of confinement. Some of them laughed at the question as to whether they quit work during pregnancy. One mother remarked that "Annie was almost born in the beet field." and another "topped until 6 a. m., and Lucy was born at 7 a. m."

Many of them complained that the work was very hard and that they suffered from backaches and sore or stiff muscles. One young woman who had been a beet-field worker for 13 years said that during topping she could not "sleep nights because her hands and arms hurt so." Another mother was "used up from beets." She was only

49 years old, but she had had to work so hard that she felt she could not last much longer. Those who reported, as a few did, that they "liked beet work better than housework," or found it "easier than haying," were almost invariably women who, with four or five others, worked a small acreage, many hands making light work. "Beet work is easy if you know how to do it," said one mother who, with five other workers, was caring for 15 acres.

As is usually the case with the mother who is gainfully employed, the day's work during the beet-growing season does not end with the end of the field day. During the period of their field work only 14 of the 454 working mothers were relieved by some other adult in the household of the burden of preparing food for the family, and only 42 had a child to help them. Where the meals were eaten at home, as was done in 9 out of 10 of the families, the mother left the field a little earlier than the other workers in order that the food might be ready for them on their arrival, and she remained at home somewhat longer than they in order to clear up after the meal, unless, as was sometimes the case, she left all the dishes to wash at night. When the meals were taken to the field they had to be prepared by the mother before she left home in the morning. Six families took their breakfasts to the field, and began work before eating, and three of these families also carried their dinners. Forty-seven other families took only their dinners to the field. That the usual rising time for the women was very early can be easily understood. Many said that they rose at daylight, and that Saturday night, when the family washing was done, became Sunday morning before they went to bed.

Hours of labor and duration of season.

Women's work in the beet fields was not a matter of helping out in the fields when household duties permitted. It was in these families a serious occupation, taking precedence over all others, and pursued in most cases throughout the season. "Our meal," declared one of the mothers, "stands on the table from one end of the beet work to the other. No time to clean house."

Nine-tenths of the working mothers did blocking and thinning. The daily hours reported by the greatest number of women were 10, exclusive of mealtime. Close to one-half of those who did the spring work had worked 10 hours or more, though proportionately fewer women in farm owners' or tenants' families worked so long a day. Forty-two mothers, all except one of whom was the wife of a laborer, reported an average working-day of 12 hours or longer.

TABLE XXII.—*Daily hours thinning and blocking by economic status of family; mothers working in beet fields: Colorado group.*

Daily hours thinning and blocking.	Mothers working in beet fields.						
	Total.		Economic status of family.				
			Laborer.		Tenant farmer.		Farm owner. ¹
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	454		352		61		41
Did not work blocking and thinning...	47		39		3		5
Worked blocking and thinning.....	407	100.0	313	100.0	58	100.0	36
Less than 4 hours.....	3	.7	2	.6	1	1.7	
4 hours, less than 5.....	2	.5	1	.3			1
5 hours, less than 6.....	11	2.7	3	1.0	6	10.3	2
6 hours, less than 7.....	24	5.9	14	4.5	6	10.3	4
7 hours, less than 8.....	34	8.6	27	8.6	4	6.9	3
8 hours, less than 9.....	54	13.3	39	12.5	10	17.2	5
9 hours, less than 10.....	80	19.6	64	20.4	10	17.2	6
10 hours, less than 11.....	84	20.6	62	19.8	12	20.7	10
11 hours, less than 12.....	61	15.0	52	16.6	5	8.6	4
12 hours, less than 13.....	27	6.6	27	8.6			
13 hours, less than 14.....	9	2.2	9	2.9			
14 hours, and over.....	6	1.5	5	1.6	1	1.7	
Not reported and irregular.....	12	2.9	8	2.6	3	5.2	1

¹ Per cent distribution not shown where base is less than 50.

Half the mothers who did blocking and thinning spent four weeks or more at it. The largest group, comprising 155, or not quite two-fifths of those who worked at the process, worked between four and five weeks; the next largest number, 122, or three-tenths, worked between three and four weeks. But little difference appeared in the length of time worked at the process by wives of contract laborers and wives of beet growers.

Somewhat fewer mothers than did blocking and thinning—though still close to 90 per cent of those who worked—did hoeing. In this operation 8 to 10 hours was the working day for considerably more than half the women in every group, as Table XXIII shows; almost one-sixth of the women, chiefly the wives of contract laborers, had worked 11 hours or more a day.

TABLE XXIII.—Daily hours hoeing, by economic status of family; mothers working in beet fields: Colorado group.

Daily hours hoeing.	Mothers working in beet fields.						
	Total.		Economic status of family.				
			Laborer.		Tenant farmer.		Farm owner. ¹
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	454	.....	352	.....	61	.....	41
Did not work hoeing.....	65	.....	49	.....	7	.....	9
Worked hoeing.....	389	100.0	303	100.0	54	100.0	32
Less than 4 hours.....	7	1.8	5	1.7	2	3.7	.....
4 hours, less than 5.....	6	1.5	4	1.3	1	1.9	1
5 hours, less than 6.....	14	3.6	8	2.6	5	9.3	1
6 hours, less than 7.....	32	8.2	26	8.6	5	9.3	1
7 hours, less than 8.....	41	10.5	35	11.6	4	7.4	2
8 hours, less than 9.....	65	16.7	45	14.9	14	25.9	6
9 hours, less than 10.....	82	21.1	64	21.1	8	14.8	10
10 hours, less than 11.....	64	16.5	53	17.5	8	14.8	3
11 hours, less than 12.....	40	10.3	35	11.6	3	5.6	2
12 hours, less than 13.....	10	2.6	9	3.0	.....	.....	1
13 hours, less than 14.....	6	1.5	6	2.0	.....	.....	.....
14 hours and over.....	4	1.0	4	1.3	.....	.....	.....
Not reported and irregular.....	18	4.6	9	3.0	4	7.4	5

¹ Per cent distribution not shown where base is less than 50.

From two to three weeks was reported by well over one-third of the mothers as the duration of their work in hoeing, but 99, or one-fourth of them, had worked three weeks or more. One mother whose fields were very weedy had "hoed every day all summer."

In the harvest work hours were long. Not quite one-fourth of the 404 mothers who worked at pulling and topping reported 9 to 10 hours in the field. More than one-fourth had worked 10 to 11 hours; and one-ninth had worked 11 or 12 hours daily. Only three-tenths of the mothers had worked less than 9 hours a day, proportionately fewer of the wives of laborers than of the wives of farm renters and owners. Table XXIV gives the daily hours spent at pulling and topping by the women in each of the three groups.

in the fields she had found her baby, whom she left in the care of a neighbor's child, cold and unfed; at the end of 3 weeks it had fallen ill and died. Another mother said that her baby 1 year old had died through lack of care and cold while she was working at pulling and topping in the season of 1920, a statement confirmed by the head physician of the county hospital.

When children just old enough to run about were taken to the fields, with no one to take care of them, the irrigation ditches offered a special source of danger. In each of 2 families a child under 3 years of age had been drowned in an irrigation ditch.

FAMILY EARNINGS.

Rate of pay and earnings from beet contracts.

Laborers are engaged either by the sugar company or directly by the farmer whose beet crop they are to handle. The resident families in Colorado usually make their working agreements directly with the farmers. Most of them have lived in the locality a number of years and are thoroughly familiar with all conditions pertaining to the handwork. Many families return to the same farm to work year after year. They know the farms, their locations and the conditions of work, the rates paid, and, in short, are in a position to make their own bargains. Of 348 resident laborers' families included in the present study only 21 reported that they had secured employment through the sugar company whereas 318 had made their agreement directly with the farmer. The great majority of the migratory workers, on the other hand, were engaged by sugar-company agents, who apportioned them among the growers, the company paying their railroad fare to the beet fields. Forty-three of the 70 nonresident families studied had been engaged by the sugar company and only 19 had made their own agreements with the farmers.⁴³

According to the terms of the contract made with the grower, which in many cases is only an oral one, the laborer undertakes the handwork on a specified number of acres at a specified rate per acre for each process, while the grower in addition to the money payment agrees to furnish living accommodations, water, and transportation between the railroad station and the farm. Over half the families covered in the study had signed no contract. This group included well over one-third even of the laborers whose agreement was made with the sugar company and three-sevenths of the migratory laborers. The terms as stated in the printed contracts drawn up by the sugar companies nevertheless formed the basis of all agreements.

⁴³ Two families were engaged through friends, two through an employment office, and two through other beet workers, one through a contractor, and one did not report the method of engagement.

The rate per acre to be paid for the handwork in beet raising is usually fixed at the beginning of the season, whether or not a contract is signed, and the same rate prevails quite generally among all workers, though in exceptional cases a different rate may be given. In the season of 1920, \$35 an acre, including all processes, was the usual rate. Of the 388 laborers who did all the handwork, 203, or somewhat over one-half, received \$35 an acre; only one man received more, \$36, and the rest received from \$30 to \$34.⁴⁴ In this connection it may be said that the company agents when recruiting labor promised only \$30 an acre. Some of the laborers, quick to discover the rate paid resident workers, demanded and obtained \$35; still 38 per cent of the 70 transient families received only \$30 per acre, while only 11 per cent of the residents were paid at this low rate, and three-fifths of the resident laborers received the top rates, whereas only three-tenths of the migratory workers had obtained it. Sometimes the farmers were obliged to increase the rates, if they had engaged workers at \$30 who subsequently found out that others were getting \$35, but in most cases the rate agreed upon was held to.

Twenty-one of the laborers had not done all the handwork. Where the hoeing had been omitted the rate was \$27 in one case, and \$29.50 in another. Where no pulling and topping were done \$14.50 and \$16.50 were paid; where pulling and topping alone were done rates ranged from \$15 to \$19 per acre. When a contract for pulling and topping is made after the beets are well grown it is possible to judge of the variation in the amount of work on different pieces of land, so that the price may fairly vary with the stand of beets. No payment is made until after the completion of a process, which may not be for as much as two months after the work has been begun.

What the earnings of a beet-field laborer's family amount to in a season varies with the acreage worked and the number of workers. With the same number of workers, moreover, the acreage undertaken and consequently the earnings vary according to the proportion of children and their ability. (Table XXV.) The largest group of laborers' families worked from 30 to 40 acres, and only half of those reporting had an acreage of less than 30. Among the 331 families in the present study that had worked all the season and that reported their earnings, the largest group was that whose earnings were between \$800 and \$1,000. Somewhat less than one-fifth of the families were in this group. They totaled 254 workers, two-fifths of whom were children, the most usual working combination being 2 adults and 2 children. Three-tenths of the laborers' families earned less than \$800, 41 or one-eighth of them earning even less than \$600. Nearly half these 41 families had, however, but 2 workers. About one-half the families earned \$1,000 or over. Over one-seventh re-

⁴⁴ Twenty-three families did not report rate of pay.

ceived between \$1,000 and \$1,200 for their work on the beet crop, the combination of workers most often found being again 2 adults and 2 children, though there were 2 families where 1 adult and 2 children had brought in this amount, and others where there had been 7 workers. One-third earned from \$1,200 to \$2,000, including 34 families where there were but 2 adult workers (that is, workers over 16 years of age), and 2 families with but 1 adult. The number of children in a family varied from 1 to 6. Ten families, or 3 per cent, earned from \$2,000 to \$2,600, and there were in these families 71 workers, 37 of whom were children.

According to the average acreage cared for per child as found in the present study, the value of a child's work on the beet crop averaged approximately \$200 if he worked in all the processes.⁴⁵

TABLE XXV.—Amount payable for work in beet fields, by number of persons working; families¹ working in beet fields on all operations: Colorado group.

Amount payable for work in beet fields.	Families ¹ working in beet fields on all operations.													
	Total.		Number of persons working. ²									7	8	9-11
			2		3		4		5		6			
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	331	100.0	33	44	85	100.0	64	100.0	54	100.0	36	10	5	
Under \$400.....	10	3.0	6	1	2	2.4	.....	.....	.....	.....	.....	1	.....
\$400-\$599.....	31	9.4	13	9	5	5.9	.....	.....	3	5.6	.....	.....	.....
\$600-\$799.....	57	17.2	8	13	20	23.5	.....	15.6	3	5.6	.....	.....	.....
\$800-\$999.....	61	18.4	6	13	23	27.1	.....	12.5	8	14.8	.....	.....	.....
\$1,000-\$1,199.....	51	15.4	.....	7	19	22.4	.....	25.0	5	9.3	.....	.....	.....
\$1,200-\$1,399.....	26	7.9	.....	.....	6	7.1	.....	17.2	7	13.0	.....	.....	.....
\$1,400-\$1,599.....	43	13.0	.....	1	8	9.4	.....	20.3	8	14.8	.....	.....	.....
\$1,600-\$1,799.....	30	9.1	.....	.....	2	2.4	.....	4.7	12	22.2	.....	.....	.....
\$1,800-\$1,999.....	11	3.3	.....	.....	.....	.....	.....	1.6	7	13.0	.....	.....	.....
\$2,000-\$2,599.....	10	3.0	.....	.....	.....	.....	.....	3.1	1	1.9	.....	.....	.....
\$3,000 and over.....	1	.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Excludes tenant and farm-owning families.

² Per cent distribution not shown where base is less than 50.

³ Excludes 40 families that did not report amount payable.

For the length of time actually worked, the handwork on the beet crop appears to bring in fairly high returns, though the method of delaying payment until after a process is completed makes it difficult, perhaps, for the laborers to spend their money to the best advantage.⁴⁶ The income from the work is further augmented for migratory families, if not for those resident within a few miles of

⁴⁵ See p. 36.

⁴⁶ Two hundred and forty-one, or almost three-fifths of the laborers' families, bought their supplies entirely on credit; 110 on credit and cash both; and only 59, that is, about one-seventh, had wholly cash dealings. Migratory families found it difficult to obtain credit. In some cases the farmer would establish credit with the storekeeper up to a fixed amount, if the laborers had no cash to pay; 12 such cases were reported, and in 9 of them the farmer himself paid the bills, deducting the amount from the beet-field laborer's pay, a practice which is obviously subject to certain abuses.

the beet fields, by the fact that shelter is provided and that in some cases it is possible to have a garden and a cow and chickens.⁴⁷ Some of the workers, in fact, maintained that there was "good money in beets," and among the more thrifty of the resident laborers there were evidences of prosperity, such as the owning of a small house or an automobile. One hundred and thirty-one laborers' families, or almost one-third, had purchased automobiles, presumably from the proceeds of the work in the beet fields, as most of them did little other work.

The income from beet-field labor, however, represents family earnings and not the earnings of the head of the household. Because the work of women and children could be depended upon to bring the family income up to a point where it was believed to be sufficient for family needs, as it did in many families, the necessity for work throughout the year on the father's part was not so urgent as it would have been had he borne the full responsibility for the support of wife and children. The attitude of one Russian-German father was not an uncommon one: "Too old to work—53 years old," he told the bureau agent. "Winter time rest, summer time work little mit kids."

Father's earnings in other work.

The income from the work in the beet fields represents in a large number of families included in the study the major part, if not all, of the annual income. About four-fifths of the fathers who were contract laborers did a little work during the summer in addition to their work on the beet crop, and about the same number had winter employment.

TABLE XXVI.—*Father's summer occupation, by amount of earnings; fathers with employment in summer other than in beet fields: Colorado group.^a*

Father's summer occupation other than laborer in beet fields.	Fathers with employment in summer other than in beet fields. ^a												
	Total.		Amount of earnings. ^b										Not reported.
	Number.	Per cent distribution.	Under \$1.25.	\$25-\$49.	\$50-\$99.	\$100-\$149.	\$150-\$199.	\$200-\$249.	\$250-\$299.	\$300-\$399.	\$400-\$499.	\$500 and over.	
Total.....	314	100.0	19	44	48	42	29	16	11	14	7	3	81
Farm laborer.....	228	72.6	17	36	38	27	22	8	10	7	1	2	60
Factory employee... 19	6.1	.....	3	.....	2	3	2	.....	3	2	.....	4	4
Sugar.....	17	5.4	.....	3	.....	2	3	2	.....	2	1	.....	4
Other.....	2	.6	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....
Skilled trades.....	25	8.0	.....	3	1	.....	.....	1	.....	2	3	1	14
Railroad laborer....	24	7.6	.....	1	8	7	3	2	1	1	.....	.....	1
All other occupations	18	5.7	.....	2	1	1	6	1	3	.....	1	.....	2

^a Excludes fathers in tenant and farm-owning families.
^b Farm laborers in addition to cash earnings usually received one or more meals and in some cases lodging.
^c Includes 10 fathers who did not work in beet fields.

⁴⁷ Six of the 70 migratory laborers' families kept cows, 8 kept chickens, and about one-third had gardens, most frequently one-eighth or one-fourth of an acre in size.

A few fathers, after the thinning and blocking had been completed, left the hoeing to be done at a more leisurely pace by the mother and children, and engaged in other work until the beet harvest. Others worked during the period of six weeks or two months which elapsed between the completion of hoeing and the beginning of pulling and topping. Grain was being harvested at this time, and employment as a harvest hand was easy to obtain. Farm work, including harvesting, gave employment to 228, or almost three-fourths of the fathers who had had some summer occupation in addition to the work in the beet fields. Less than one-sixth of those who reported their earnings had made \$250 or more, several as much as \$500; but almost half had earned less than \$100.

Between-seasons employment for the resident laborers did not amount to much. Eighty-six, or almost one-fourth, of the fathers in these families did no work beyond an odd job or two, perhaps, from the end of one beet season to the beginning of the next, and another fifth had worked less than six weeks in addition to beet-crop work. How much of this was due to inability to find work it is impossible to say. It was not easy to secure winter work in the beet-growing districts. "Everybody tries to get work in the sugar factory," said a number of fathers, "and the man who gets work there is lucky. There are so many men after the jobs, and there is almost nothing else to do." Stock raising had been advocated as a means of providing winter employment for farm hands and in some localities gave work to a few men. On the other hand, according to current report and to statements of the families themselves, a number of the men made no effort to find regular work during the winter. They remained idle for six months, supported to a considerable extent by the labor of wife and children during the other six. In many cases they were thus enabled not only to take their ease for half the year but also to put money in the bank.

The migratory laborers made more of a business of winter employment than did the resident workers. They were largely Mexicans, who, lacking the thrift of the Russian-Germans, rarely saved enough from the summer to last through the winter. Only six reported that they did no work in the winter. The majority were laborers in factories or mines or on railroads.

Of the 228 fathers, including both resident and migratory laborers, who had worked during the winter preceding the inquiry and who reported the amount which they had earned, 142, or more than three-fifths, had made less than \$300 at their winter employment, covering a period of approximately six months from December 1 to the beginning of the spring work in the beet fields. Only 1 in 10 had made as much as \$600.

TABLE XXVII.—*Father's winter¹ occupation, by amount of earnings; fathers² who were employed in winter; Colorado group.*

Father's winter occupation. ³	Fathers ² employed in winter.												
	Total.		Amount of earnings. ³										Not reported.
	Num-ber.	Per cent dis-tribu-tion.	Less than \$50.	\$50- \$99.	\$100- \$149.	\$150- \$199.	\$200- \$299.	\$300- \$399.	\$400- \$499.	\$500- \$599.	\$600- \$799.	\$800 and over.	
Total.....	306	100.0	20	34	23	16	49	32	19	11	21	3	78
Farm.....	65	21.2	7	6	3	4	6	5	5	3	4	.....	22
Farmer.....	9	2.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9
Laborer.....	56	18.3	7	6	3	4	6	5	5	3	4	.....	13
Factory employee.....	141	46.1	11	19	18	8	28	14	3	4	7	2	27
Sugar.....	125	40.8	10	18	17	7	25	11	3	4	6	.....	24
Other.....	16	5.2	1	1	1	1	3	3	.....	.....	1	2	3
Skilled trades.....	21	6.9	.....	1	2	.....	2	1	2	.....	5	.....	8
Railroad laborer.....	26	8.5	.....	5	.....	1	6	7	4	.....	.....	.....	3
Domestic and personal service.....	5	1.6	1	.....	.....	.....	.....	1	1	1	.....	.....	1
Mining.....	11	3.6	.....	1	.....	.....	1	3	1	1	.....	1	3
All other occupations	37	12.1	1	2	.....	3	6	1	3	2	5	.....	14

¹ From Dec. 1 to beginning of work in beet fields.
² Excludes fathers in tenant and farm-owning families.
³ Farm laborers in addition to cash earnings usually received one or more meals and in some cases lodging

HOUSING AND SANITATION.

Houses.

In the northern counties of Colorado, where the beet farms are so large that a beet-field laborer's family usually finds employment enough for the season on one farm, families being selected by the farmer with reference to their working capacity and his beet acreage, living accommodations are generally provided by the farmer. In only one case among the families studied did a laborer's family occupy quarters owned by the sugar company. In a few cases the farmer provided part of or all the furniture, which usually consisted of a bed, a stove, and a few boxes and cooking utensils, but almost all the families, including a large proportion of the migratory group, brought their household equipment, including the stove, with them.

Some of the beet-field laborers, including 39 families in the present study, lived in their own houses on the outskirts of town in the Russian-German settlements and went out each day to work in the beet fields, in some cases in their own automobiles. The houses owned by the laborers, though seldom more than one story high and often containing only two or three rooms, were as a rule clean, well-kept little places, frequently very attractive, with good furniture, bright rugs or new linoleum, lace curtains, and plants in every corner.

The 90 per cent of the laborers who lived in houses provided by farmers did not usually fare so well as those who owned their own dwellings, although the districts studied are among the oldest beet-raising areas in the State, and housing for beet-field laborers in these

districts has probably reached a higher stage of development than the average. About 44 per cent were lodged in fairly new, little one- and two-room houses, usually in fair and often in good condition, reflecting a growing realization on the part of the farmer that the better class of laborers will not stay in the tumble-down shanties that used to be considered good enough for the "beeters." But over half the 378 families whose living quarters were furnished by the farmer occupied buildings which deserved the name "beet shack," by which they were generally known. A typical one is shown in the upper illustration. The shack was built of tar paper, or of corrugated iron, or was a roughly boarded shanty with, in some cases, only one window and one door. Sometimes it was only a caravan wagon, which, hung from end to end with pots, pans, washtubs, and clothes, was moved about from field to field as the work required. The tenants were entirely dependent on the good will of the farmer for the comfort and even the cleanliness of their quarters. Many families complained of bedbugs and other vermin left by previous tenants. Well over a third of the 143 shacks for which a report as to the condition of repair was secured were found to be in bad condition and not weatherproof. Leaking roofs, broken windows, and general dilapidation prevailed. Sometimes the farmer would "mend" a badly leaking roof by throwing an old piece of canvas over the worst part of it. One mother, who at the time of the agent's visit was scouring her kitchen and painting it because it was "full of bedbugs when we came," said that the previous year her shanty had been so bad that during a snowstorm she had to "crawl under the table" with her child, and "all the food in the house got wet." One family declared that their house was "nothing but a dog house." Another described theirs as "not fit for chickens to live in." Rain and snow came in and there were holes in the floor through which snakes, it was said, had several times come up into the room and had been found crawling around the floor. In one case, typical of many, rough unmatched boards with wide cracks between, one window frame with no glass, and one door, inclosed a small, square room which had no furniture except a bed, a stove, two boxes, and a trunk. A few rods away stood a new poultry house, clapboarded and shingled, the windows of which had not a single pane missing.

Even when in good condition, the shacks, thin-walled, without shade, and in most cases with no means of securing proper ventilation, were in summer exceedingly hot; when the chill nights and mornings of October and November came—and some families continued to occupy them even further into the winter—they were practically impossible to heat. The season of 1920 was very favorable, as far as weather was concerned, yet snow fell before the beets were all harvested and mornings when the temperature was well



SHACKS OCCUPIED BY COLORADO BEET-FIELD LABORERS.



ONE OF THE BETTER CLASS OF HOUSES PROVIDED FOR THE COLORADO BEET-FIELD LABORER.



A BABY TENT OF CANVAS.

A rare instance of careful provision for the baby's protection when taken to the field.

below freezing were not infrequent. Little children were sometimes found huddled together in the shanties, bundled up in coats trying to keep warm while they waited for their parents to return from work. According to one of the laborers, workers who came in from the fields with wet clothes found it impossible to get dry even when standing by the fire—so badly built were the shanties.

Toilet facilities were not always adequate. Though almost all families had an outside privy, 35 shared theirs with one other family and nine with two other families. Ten families had no toilet facilities whatever.

The beet-field laborers' quarters are regarded as merely temporary dwellings. Some of the families resident in towns near the beet fields stayed in the "field houses" only during the time they were actually engaged in each process. Others, however, occupied the "field houses" for approximately six months. The migratory families, if they engaged in all the processes, were obliged to spend practically six months in them.

Overcrowding.

Many of the beet-field laborers' families lived under such conditions of overcrowding that all comfort and convenience had to be sacrificed and no privacy was possible. Table XXVIII shows the number of persons in the household and the number of rooms in the house. To the left of the zigzag line are shown the number of families with two or more persons to a room. There were 320 of these families, amounting to 77 per cent of the total number. Only 21 per cent reported less than two persons per room.⁴⁵ Almost half were living with three or more persons to a room. One hundred and ninety-one families, averaging 6.6 persons per family occupied two-room dwellings. Among them were 94 households of more than 6 members each and 14 of 10 or more each; the latter included one household in which there were two families, and another consisting of three families. This means that from three to seven persons had to sleep in each of the two rooms, one of which had to be used as a kitchen and living room. Fifty families, consisting of from 3 to 11 persons per family, lived in one room. One of these households included a father, his son and daughter, each over 16 years of age, a younger child, and a girl over 16 who helped the family with the beet-field work.

⁴⁵ Twelve families did not report the number of rooms.

TABLE XXVIII.—Number of persons in household, by number of rooms in house; families¹ working in beet fields: Colorado group.

Number of persons in household. ²	Families ¹ occupying specified number of rooms.											
	Total.	1	2	3	4	5	6	7	8	9	17	Not reported.
Total.....	418	50	101	98	42	7	9	5	2	1	1	12
2.....	1		1									
3.....	29	8	16	3	2							
4.....	36	6	17	5	5		1					2
5.....	60	11	31	11	6							1
6.....	71	6	32	21	5	1	2			1		3
7.....	62	8	23	15	8	4	3	1				
8.....	72	5	32	19	8	1	1	1				5
9.....	45	2	25	11	4		1	2				
10.....	19	3	6	5	2		1	1	1			
11.....	12	1	5	3	1	1					1	
12.....	3			3								
13.....	3			1	1					1		
14.....	4		3	1								
15 and over.....	1											1

¹ Excludes tenant and farm-owning families.

² There were 4 instances of 2 families each and 2 of 3 families each living together in complex households.

Water supply.

As most of the beet farms in Weld and Larimer Counties lie in irrigated lands to which water is brought from some distance, in many cases the supply of drinking water had to be hauled from the nearest town, distances varying from half a mile to 6 or 7 miles. Over half the contract laborer's families reported the use of water stored in cisterns, which were sometimes very dirty. Complaints of the water were frequently made. "They bring you water once in six weeks," said one father, "and dump it into that cistern. When it's warm it gets stale; and if you drink it, you get sick." Apart from the question of its being unpalatable or impure, water which must be brought from a distance is not likely to be plentiful. A scant water supply increases the work of the housewife and is bound to result in lower standards of cleanliness on the part of the family.

One-fifth of the laborers had the use of a drilled well. Seven per cent reported using a dug well, which, if not carefully protected, is liable to pollution from surface water. Two families reported the use of the irrigation-ditch water for all purposes, though commonly it was used only for washing. One of these families had formerly used the farmer's well, as was usually done when the shack was near the farm house, but the farmer and his wife were so disagreeable when they went for water, the father said, that the family preferred to use the water from the ditch. This water had, of course, drained land which was polluted by the refuse from barns and privies. One of

the families using it said that in wet weather it was too muddy to use, and that "dogs and ducks die in it and make it bad."

Only 11 households had water piped into the house. The others had to go outside for their water supply, which was at a distance of from several feet to a quarter of a mile from the house. In a majority of cases, however, it was less than 10 yards away.

HEALTH OF CHILDREN.

As a part of the present study, complete physical examinations were made of approximately 1,000 children in families employed in the beet fields.⁴⁹ A physician and nurse from the United States Children's Bureau visited the schools in Weld and Larimer Counties during October, November, and December, 1920, and examined all such children in each school until the desired number of records had been secured. There was no attempt to select groups, racial or otherwise, the children being examined as they presented themselves.

It was not difficult in Weld and Larimer Counties to find in school during school hours in October, November, and December, 1920, 1,022 children belonging to families employed in the beet fields, although the beet-harvest season was at its height and many schools in these two counties had been closed to allow the children to work in fields. These children may be considered a fairly typical group as far as working conditions are concerned—a disproportionately large number of them, however, belonged to farmer's families, so that in general their living conditions were better than those of the group included in the schedule study.

⁴⁹ See form used, p. 70.

[PHYSICAL EXAMINATION RECORD FORM.]
U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU.

CHILD LABOR AND THE WORK OF MOTHERS

(Surname) (father) (child) (address) , 192

School Sym. Sym.

CHILD: 1. M. F. 2. Born.....192...3. Age. YTS. mos. 4. Entered (a) Kindergarten, N., at.....YTS. (b) First grade, N., at.....YTS.

PHYSICAL EXAMINATION.

GENERAL: 5. Weight.....lbs. 6. Height.....in. 7. Anemia, N. 8. Nutrition: excel., G., P., V.P. 9. Temp., ° 10. Vaccinated, N. (a) Age. YTS. (b) Scar, N.

HEAD: 11. Size: normal, large, small 12. Shape: normal, abnormal (spec.) 13. Fontanelle: closed, open.....cm. 14. Craniofacies, N. 15. Abnormal condition, N. 16. Diagnosis:.....

EYES: 17. Vision (a) R. (b) L. (c) Imposs. to test.

18. Diseases.	N	R	L	Diseases.	N	R	L
(a) Blepharitis				(1) Conjunctivitis			
(b) Style				Acute			
(c) Ptosis				Chronic			
(d) Corneal opacities				Phlyctenular			
(e) Corneal ulcer				(g) Strabismus			
				19. Glasses, N.			

EARS: 22. Hearing: R.....ft. L.....ft. 23. Otorrhea: (a) Acute, N., R., L. (b) Chronic, N., R., L.

24. Other abnorm.....

25. Diagnosis of Sp.....

TEETH: 26. Teeth: (a) Temp. No. Decayed No. Filled No. (b) Perm. No. Decayed No. Filled No. Malocclusion, N.

28. Alveolar abscess, N..... 29. Other abnorm.....

NASOPHARYNX: 30. Mouth breathing, N. 31. Nasal discharge, N. 32. Nasal obstr., N. 33. High arch palate, N. 34. Adenoid facies, N.

35. Tonsils: Rem. (a) enlrg., N. (b) greatly enlrg., N. (c) dis. N. 36. Other abnorm.....

37. Diagnosis of Sp.....

GLANDS: 38	Pal- pable	En- larged	Great- ly en- larged	Associa- ted (spec.)
(a) Occipital	Y	N	Y	N
(b) Submaxillary	Y	N	Y	N
(c) Cervical	Y	N	Y	N
(d) Axillary	Y	N	Y	N
(e) Epitrochlear	Y	N	Y	N
(f) Inguinal	Y	N	Y	N
(g) Thyroid	Y	N	Y	N
(h) Other	Y	N	Y	N

CIRCULATORY SYSTEM: 39. Heart. (a) Apex beat displ., N. (b) Enlarged, N. (c) Murmur, N. (loc.) (d) Murmur, N. (loc.) Transmitted back, axilla, sternum, N. 40. Heart disease, N., Diagnosis:.....

RESPIRATORY SYSTEM: 41. Chest: (a) Excursion: Normal, abnormal, (spec.) (b) Fremitus: normal, decr., incr. (c) Dulness, N. (spec.) (d) Rales: N., kind.....loc. 42. Other defects.....

43. Respiratory dis., N., Diagnosis:.....

SKIN: 44. Pediculosis: (a) body, N. (b) scalp, N. Insects, N.; nits, N. 45. Eczema, N. (loc.).....46. Acne, N. 47. Hypertrophicosis, N. 48. Impetigo, N. 49. Infected sores, N. 50. Scabies, N. 51. Ringworm: (a) scalp, N. (b) body, N. 52. Other conditions.....

ABDOMEN: 53. Distension, N. 54. Tenderness, N. (loc.) 55. Enlarged liver, N. 56. Enlarged spleen, N. 57. Hernia, N.; umbilical: inguinal, R., L., double; femoral, R., L., double. 58. Other defects.

BONEY AND MUSCULAR SYSTEM: 59. Beaded ribs, N. 60. Harrison's groove, N. 61. Enlarged epiphyses, N. 62. Round shoulders, N. 63. Winged scapulae, N. 64. Scoliosis, N. 65. Lordosis, N. 66. Kyphosis, N. (loc.) 67. Knock-knee; N. 68. Bowlegs, N. 69. Flat foot, N. 70. Pigeon toe, N. 71. Clubfoot, N. (spec.) 72. Arthritis, N. (spec.) 73. Pronation, N. (a) R., N. (b) L., N. 74. Paralysis, N. (spec.) 75. Other defects (cong. and acq.).....

NERVOUS SYSTEM: 76. Speech defects, N. (a) Stuttering, N. (b) Stammering, N. 77. Tic, N. (spec.) 78. Chorea, N. (spec.) 79. Other defects.....

80. Nervous dis., N., Diagnosis:..... (Over.)

[PHYSICAL EXAMINATION RECORD FORM (REVERSE)]

80. **GENITALIA:** 81. Male: prepuce adherent, contracted, normal.....
 82. Female: vaginal discharge, N.....
MENTAL CONDITION: S: (a) Normal, N. (b) Defect app. (spec.).....
 (c) Abnormality susp. (spec.).....

80.	(a) N W N P	(b) N W N P	(c) N B N P	(d) F W F O	(f) Country of birth	(g) National- ity	(h) Speak Eng- lish
M.							Y N
F.							Y N

84. **LABORATORY FINDINGS:**.....
 90. **OCCUPATION:**
 M. Gail, emp. N. Home (spec.).....
 Away (spec.).....

85. **PREVIOUS ILLNESS:** (a) Contagious.....
 (b) Respiratory.....
 (c) Digestive.....
 (d) Other.....

86. **BAD HABITS:**.....

87. **SUMMARY OF DEFECTS AND DISEASES:**.....

88. **RECOMMENDATIONS:**.....

Nationality, age, and sex of children examined.

Table XXIX presents the father's nationality for the entire group studied—a total of 1,022 children, of whom 838 (82 per cent) were of foreign white origin, 723 (86 per cent) being Russian-German. One hundred and seventy-seven (17.3 per cent) were native white.

TABLE XXIX.—*Nationality of father, by sex of child; children given physical examination: Colorado group.*

Nationality of father.	Children given physical examination.		
	Total.	Boys.	Girls.
Total.....	1,022	562	460
Native white.....	177	99	78
Foreign-born white.....	838	461	377
Russian-German.....	723	384	339
Mexican.....	51	35	16
Swedish.....	17	12	5
German.....	16	12	4
Other.....	31	18	13
Indian.....	1	1	.....
Japanese.....	2	1	1
Not reported.....	4	.....	4

The age of the children in the group studied is given in Table XXX and their maturity in Table XXXI.

TABLE XXX.—*Age, by sex; children given physical examination: Colorado group.*

Age.	Children given physical examination.		
	Total.	Boys.	Girls.
Total.....	1,022	562	460
4 years, under 5.....	5	3	2
5 years, under 6.....	19	13	6
6 years, under 7.....	80	39	41
7 years, under 8.....	113	53	60
8 years, under 9.....	114	47	67
9 years, under 10.....	115	63	52
10 years, under 11.....	141	86	55
11 years, under 12.....	114	70	44
12 years, under 13.....	115	65	50
13 years, under 14.....	96	60	36
14 years, under 15.....	70	40	30
15 years, under 16.....	34	21	13
16 years, under 17.....	3	2	1
17 years, under 18.....	3	.....	3

TABLE XXXI.—*Maturity, by sex; children given physical examination: Colorado group.*

Maturity.	Children given physical examination.		
	Total.	Boys.	Girls.
Total.....	1,022	562	460
Prepubescent.....	798	453	345
Pubescent.....	149	77	72
Postpubescent.....	75	32	43

It should be noted particularly that 912 of the entire group, or 89.2 per cent, were under the age of 14 years, and that 701, or 68.6 per cent, were under the age of 12 years. Moreover, 78.1 per cent of the children were prepubescent.

Findings of physical examinations.

Table XXXII summarizes the physical findings in the children examined. A discussion of significant facts follows:

Heights and weights.—The children examined were weighed on a scale which was capable of fine adjustments and exact control, and small enough so that it could be packed securely in a small trunk and carried about with the bureau staff. The children were measured against an architect's blue print marked off in inches, pasted on a jointed board which could be unfolded and fastened to the wall in exact apposition. Readings were made by sliding a carefully built wooden right angle down the surface of the blue print until it rested on the head of the child, whose feet were squarely on the floor against the wall, his erect body outlined against the measuring surface. Measurements of height and weight were taken without shoes and after the removal of sweaters and coats. The usual dress for the boys was an overall garment of cotton and the girls wore cotton or woolen dresses.

The weight table used as a standard in the Colorado study—the one which was in use by the Children's Bureau—is reproduced on page 75. It presents the average weights for boys and girls at the different ages up to 16 years. From this the average weight for the different inches of height were calculated and a table prepared giving the average weight for height and an estimated minimum weight for height which was figured by deducting 10 per cent from the average. Children were classified as underweight if their weights in proportion to their heights fell below this minimum; if their weights were 15 per cent or more above average, they were classed as overweight.

TABLE XXXII.—Physical defect or disease, by sex of child; children given physical examination: Colorado group.

Physical defect or disease.	Children given physical examination.					
	Total.		Boys.		Girls.	
	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber. ¹	Per-cent.
Total.....	1,022	100.0	562	100.0	460	100.0
Without defect or disease.....	5	.5	1	.2	4	.9
With defect or disease.....	1,017	99.5	561	99.8	456	99.1
General—						
Poor or very poor nutrition ¹	150	14.7	74	13.2	76	16.5
Skin—						
Scabies.....	34	3.3	20	3.6	14	3.0
Pediculosis capitis.....	11	1.1	7	1.2	4	.9
Acme.....	8	.8	2	.4	6	1.3
Eczema.....	9	.9	5	.9	4	.9
Herpes.....	5	.5	3	.5	2	.4
Impetigo.....	3	.3	1	.2	2	.4
Xeroderma.....	7	.7	6	1.1	1	.2
Eyes—						
Vision defective.....	208	20.4	94	16.7	114	24.5
Eye diseases.....	98	9.6	61	10.9	37	8.0
Injected eyeball due to dust.....	49	4.8	32	5.7	17	3.7
Conjunctivitis (palpebral).....	10	1.0	7	1.2	3	.7
Conjunctivitis (acute ocular).....	15	1.5	11	2.0	4	.9
Trachoma.....	6	.6	1	.3	5	1.1
Blepharitis.....	8	.8	6	1.1	2	.4
Strabismus.....	6	.6	4	.7	2	.4
Ptosis.....	2	.2	2	.4	2	.4
Corneal opacities.....	3	.3	1	.2	2	.4
Stye.....	2	.2	2	.4	2	.4
Ears—						
Hearing defective.....	43	4.2	24	4.3	19	4.1
Mouth—						
Decayed teeth.....	624	61.1	348	61.9	276	60.0
Malocclusion.....	44	4.3	32	5.7	12	2.6
Gingivitis.....	20	2.0	17	3.0	3	.7
High-arch palate.....	19	1.9	14	2.5	5	1.1
Nasopharynx—						
Mouth breathing.....	357	34.9	237	42.2	120	26.1
Nasal obstruction.....	494	48.3	84	14.9	410	89.1
Defective tonsils.....	437	42.8	236	42.0	201	43.7
Enlarged only.....	12	1.2	11	2.0	1	.2
Enlarged and diseased.....	293	28.7	152	27.0	141	30.7
Diseased only.....	132	12.9	73	13.0	59	12.8
Glands—						
Hypertrophied.....	964	94.3	548	97.5	416	90.4
Goiter (simple).....	35	3.4	2	.4	33	7.2
Respiratory system—						
Respiratory diseases.....	16	1.6	10	1.8	6	1.3
Circulatory system—						
Heart disease.....	8	.8	3	.5	5	1.1
Abdomen—						
Hernia (umbilical).....	6	.6	2	.4	4	.9
Nervous system—						
Chorea.....	5	.5	2	.4	3	.7
Tic.....	3	.3	1	.2	2	.4
Orthopedic—						
Winged scapulae.....	676	66.1	386	68.7	290	63.0
Other functional malpositions affecting the spine and shoulders.....	58	5.7	47	8.4	11	2.4
Flat foot.....	221	21.6	113	20.1	108	23.5
Other malpositions of the ankles.....	5	.5	1	.2	4	.9
Asymmetry of sternum, ribs and skull (resulting from rickets or nasopharyngeal obstruction).....	111	10.8	75	13.3	36	7.8
Other defects (resulting from trauma, organic diseases, other than rickets or congenital malformations).....	18	1.8	12	2.1	6	1.3

¹ Includes Grades III and IV (the Dunfermline scale).

TABLE XXXIII.—Table of heights and weights of children.²

ns for using table of heights and weights.—Heights and weights are given separately for boys and Girls. Averages are given for births, for 3 months, for every month from 6 to 48, and thereafter for every 3 months to 16. The heights and weights of the children examined are to be compared with these average heights and weights. No heights and weights are given for the separate months after 48 months. (A child over 4 years of age, use the age at his last birthday.)

Age.	Boys.		Girls.		Age.	Boys.		Girls.	
	Height.	Weight.	Height.	Weight.		Height.	Weight.	Height.	Weight.
	Inches.	Lbs. ²	Inches.	Lbs. ²		Inches.	Lbs. ²	Inches.	Lbs. ²
.....	20.6	7.6	20.5	7.16	33 months.....	36½	30½	35½	29½
.....	23½	13	23	11	34 months.....	36½	31½	36½	30½
.....	26½	18	25½	16½	35 months.....	36½	31½	36½	30½
.....	27½	19½	26½	17½	36 months.....	37½	32½	36½	30½
.....	27½	19½	27	18½	37 months.....	37½	32½	36½	30½
.....	28½	20½	27½	19½	38 months.....	37½	32½	37	31
.....	28½	20½	27½	19½	39 months.....	37½	33½	37½	31½
.....	29	21	28½	20½	40 months.....	38	33½	37½	32
.....	29½	21½	28½	20½	41 months.....	38	33½	37½	32½
.....	29½	22	29	21	42 months.....	38	33½	38	32½
.....	30	23	29	21½	43 months.....	38	33½	38½	32½
.....	30½	23½	30	21½	44 months.....	38½	34	38	33
.....	31	24	30	22	45 months.....	39	34	38½	33½
.....	31	24	30	22	46 months.....	39	34	38½	33½
.....	31½	24½	31	23	47 months.....	39½	35	38½	33½
.....	32	25	31	23	48 months.....	39½	35½	39	33½
.....	32	25	32	24	5 years.....	41.6	41.1	41.3	39.7
.....	32	25	32	24	6 years.....	43.8	45.2	43.4	43.3
.....	33	26	32	25	7 years.....	45.7	49.1	45.5	47.5
.....	33	27	32	25	8 years.....	47.8	53.9	47.6	52.0
.....	33	27	33	26	9 years.....	49.7	59.2	49.4	57.1
.....	34	27	33	26	10 years.....	51.7	65.3	51.3	62.4
.....	34½	28	33	27	11 years.....	53.3	70.2	53.4	68.8
.....	34½	29	33	27	12 years.....	55.1	76.9	55.9	78.3
.....	35	29	34	27	13 years.....	57.2	84.8	58.2	88.7
.....	35	29	34	27	14 years.....	59.9	94.9	59.9	98.4
.....	35	29	34	28	15 years.....	62.3	107.1	61.1	106.1
.....	35½	30	35	28	16 years.....	65.0	121.0	61.6	112.0
.....	36	30	35	29					

figures for height and weight at birth are from L. Emmett Holt (Diseases of Infancy and Childhood, 20) and are based on original observations. Those for boys at 3 months were given in a personal communication by Dr. Holt. The figures for height and weight from 6 to 48 months are from the Anthropometric Table compiled for the American Medical Association by F. S. Crum, and are based on the measurements of 10,423 normal babies (5,602 boys and 4,821 girls) examined at baby-health conferences and possibly represent measurements slightly above the average, especially in weight. The heights and weight from 5 to 16 years are quoted from Bowditch (8th Annual Report of the Board of Health of Massachusetts, 1877, p. 275) and are based on the measurements of 23,931 Boston children of American and foreign parentage (13,415 boys and 10,516 girls). They agree very closely with the table of average American height calculated by Boas from the data of 45,151 boys and 43,298 girls in the cities of Boston, St. Louis, Milwaukee, Worcester, Toronto, and Oakland; and the table of average American weight calculated from the data of about 68,000 children in the cities of Boston, St. Louis, and Milwaukee. (See Baldwin, B. T., Physical Growth and School Progress, U. S. Bureau of Education Bulletin, 1914, No. 10, Whole No. 581, p. 150.)

Approximate equivalents of decimal fractions of a pound in ounces: 0.1, 1½; 0.2, 3; 0.3, 4½; 0.4, 6; 0.5, 8; 0.7, 11; 0.8, 12½; 0.9, 14; 1.0, 16. Weights given in this table for children under 2 years are somewhat higher than those given by L. Emmett Holt (Diseases of Infancy and Childhood, 1916, p. 20). These are: 6 months, boys 16 pounds, girls 15 pounds; 12 months, boys 21 pounds, girls 20.5 pounds; 18 months, boys 24 pounds, girls 23.5 pounds; 24 months, boys 27 pounds, girls 26 pounds. A variation of from 1 to 2 pounds from the averages in the table above should therefore not be considered abnormal. The heights given in the above table respond very closely to those given by Holt.

TABLE XXXIV.—Average weight for height, by sex; children given physical examination: Colorado group.

Height (inches).	Boys.		Girls.		Height (inches).	Boys.		Girls.	
	Num-ber.	Average weight (pounds).	Num-ber.	Average weight (pounds).		Num-ber.	Average weight (pounds).	Num-ber.	Average weight (pounds).
40.....	1	35.75	2	39.19	55.....	43	71.74	10	71.05
41.....	2	40.53	5	37.93	56.....	35	76.73	22	75.50
42.....	8	41.28	6	38.65	57.....	20	81.40	21	79.98
43.....	11	43.27	16	40.95	58.....	22	86.11	16	86.05
44.....	9	42.87	10	42.53	59.....	23	88.02	20	88.15
45.....	21	46.98	17	43.49	60.....	20	93.93	27	90.60
46.....	28	47.81	28	46.27	61.....	13	92.66	21	86.96
47.....	22	51.85	20	49.46	62.....	9	98.85	10	102.40
48.....	27	52.95	30	50.67	63.....	1	106.56	4	110.06
49.....	25	56.68	39	52.43	64.....	8	109.93	6	106.09
50.....	37	57.71	24	57.43	65.....	3	120.00	3	141.54
51.....	39	60.80	31	58.65	66.....	5	125.19	.....	.....
52.....	32	62.90	28	60.67	67.....	4	122.38	.....	.....
53.....	49	66.69	26	64.89	68.....	2	130.50	.....	.....
54.....	41	67.83	18	67.32	71.....	2	141.41	.....	.....

Rating the cases on the basis of the Dunfermline scale for estimating nutrition,⁵⁰ 150 cases of malnutrition among 1,022 children were found—a percentage of 14.7 (Grades III and IV, Table XXXV).

Orthopedic defects.—A high percentage of orthopedic defects was found among the children examined. A total of 676 cases of winged scapulae were found among the 1,022 children, 66.1 per cent of the entire group having this defect; hence 2 children in 3 were taxing the muscles of an undeveloped shoulder girdle in this period of their growth. In normal development the scapulae swing round on the back and lie flat on the rear wall of the chest, but when the shoulder blades lie obliquely on the sides of the chest, protruding behind, the weight of the arms and the entire shoulder girdle is thrust too far forward, and marked deformity results. The back is high and bowed over, the chest is dragged downward, and free action in breathing is interfered with. This high percentage of winged scapulae suggests that the steady stooping in the kneeling and crouching position which blocking and thinning necessitate and the intermittent stooping to handle and lift the very considerable weights involved in the harvest has an effect on the outline and posture of the growing child's body.

⁵⁰ The Dunfermline scale distinguishes four groups, as follows: Grade I, "Excellent" means the nutrition of a healthy child. Grade II, Children whose nutrition falls just short of this standard are "good." Grade III, Children "requiring supervision" are on the border line of serious impairment. Grade IV, Children "requiring medical treatment" are those whose nutrition is seriously impaired.

TABLE XXXV.—Grade of nutrition, by sex; children given physical examination: Colorado group.

Grade of nutrition.	Per cent distribution of children given physical examination.		
	Total.	Boys.	Girls.
Total.....	100.0	100.0	100.0
Grade I.....	72.0	75.4	67.8
Grade II.....	12.8	11.4	14.6
Grade III.....	13.9	12.3	15.9
Grade IV.....	.8	.9	.7
Overweight.....	.2	.....	.4
Not reported.....	.3	.....	.7

Cases of flat foot were noted in 221 instances. The normal foot has a natural arch in its structure, and the cause of flat foot in so considerable a number of the cases (21.6 per cent) in the present study may again be laid to undue strain on immature muscles. Growth which is accompanied by rapid increases in weight, and exhausting field labor in the period of growth undoubtedly create a disproportion between the weight which the foot is called upon to bear and the ability of the muscles to sustain it, accompanied by a breakdown of the arch from overwork. The condition may not cause pain. Frequently individuals do not know they have fallen arches until their attention is called to it in the course of physical examinations, and this is particularly true of children, though some of the children described a typical flat-foot pain in the muscles of the leg. The existence of left flat foot only, or the presence of a more marked collapse of the arch on the left side in case both feet were affected, was noted, which recalled the fact that children often support the weight of the body on the left foot and raise the right knee in topping beets.

The occurrence of flat foot in 6 per cent of 245 well children in a Boston institution, and 9 per cent of 357 children in attendance in the out-patient⁵¹ department of the Massachusetts General Hospital was reported by Dr. W. R. P. Emerson, as contrasted with its appearance in 21.6 per cent of the children in this study; stoop shoulders occurred in 42 per cent of the well children and in 65 per cent of the children applying for clinical care, as compared with the occurrence of winged scapulae in 66.1 per cent of the working and presumably healthy children in the present study.

The mouth and nasopharynx.—Decayed teeth were noted in 624 of the children examined (61.1 per cent), indicating striking neglect of mouth hygiene.

⁵¹ American Journal of Diseases of Children, March, 1921, p. 285.

Children having diseased tonsils or tonsils sufficiently enlarged to be obstructive, numbered 437 (42.8 per cent) and 357 children (34.9 per cent) were mouth breathers. There is a possible association of cause and effect between overcrowded living conditions;⁵² exposure during the harvest to dampness, soaking the workers from the knees down;⁵³ and the large percentage of nasopharyngeal disorders. Free nasal respiration is requisite for normal physical development in childhood, and the unobstructed use of the air channels should be regarded as of equal importance with the proper kind of diet.

The eyes.—Beet harvesting is a dusty occupation; moreover, the farmers' wagons cut up roads on their way to the dumps with the beets, so that the children travel to school through clouds of irritating dust. The 49 cases of subacute and chronic vascular injection, a sort of inactive "pink eye," may be an occupational disorder, the result of abnormal exposure to clouds of dust.

There were 208 cases of defective vision, as classified in Table XXXII, a percentage of 20.4.

Tests of vision indicate, of course, the visual acuity of the child at the time of the test. Normal visual acuity may, however, be accompanied by eyestrain as the child may strain his eyes in order to see clearly for the purposes of the test.

Hearing.—Hearing defects were likewise high in the Colorado children, a result to be expected wherever infections and defects of the nasopharynx are neglected. There were 43 cases of defective hearing (4.2 per cent).

Diseases of the skin.—The bodies and clothing of children examined were in general notably clean. The presence of 34 cases of scabies in several schools where special attention had not been directed to the contagion and the treatment essential to its cure, is responsible for the high percentage of parasitic diseases of the skin.

Smallpox vaccination.—Smallpox protection in rural districts is frequently low. Only 325 of the 1,022 children bore the evidence of a successful vaccination against smallpox, and the protected children were in general either foreign-born children who had been vaccinated as a quarantine requirement, or children recently vaccinated in a district where smallpox had been prevalent, or children who had moved into the country from a community where there was better law enforcement.

⁵² See pp. 67-68.

⁵³ See p. 31.

FAMILIES WORKING IN THE MICHIGAN BEET FIELDS.

SCOPE AND METHOD OF STUDY.

Michigan ranks second among the States in the acreage of sugar beets harvested and third in tons of sugar produced. In 1920, 17 factories were in operation and reported a beet acreage of 149,559.⁵⁴ Although beet fields and sugar factories are found in almost every part of Michigan, beets are grown for the most part in the central portion of the State, particularly in the region surrounding Saginaw and Bay City.

The district selected for study centered in Gratiot County, and extended into Isabella County on the north and Saginaw County on the east. It was chosen, after consultation with public officials and representatives of the leading sugar companies, as typical of the beet-raising areas not only of Michigan but also of the entire Middle Western beet-growing section. It had the additional advantage of being a district which supplied beets to the factories of three different companies, so that any difference among them in arrangements with laborers could be noted.

Three factories were located in the districts included in the study—one at Alma, one at St. Louis, and one at Mount Pleasant. One other factory at Owosso, though outside the district, took the beets of some of the farmers in the section visited. Three of these four factories reported to the Children's Bureau that they held contracts for about 37,000 acres of beets.⁵⁵

Three of the factories reported that an average of only 30 per cent of their laborers were resident. The fourth factory had an even smaller proportion of resident labor, as it had been more recently established. The bulk of the handwork in Michigan, in contrast to the situation in Colorado, was done by nonresident laborers, but in Michigan, as in Colorado, a great majority of the workers, both resident and nonresident, were in family groups. The proportion of single men engaged in the work was even smaller in Michigan than in Colorado. Michigan sugar companies reported only 1,045 per-

⁵⁴ See Table I, p. 2.

⁵⁵ The acreage supplying the fourth factory was not separately reported but was included in a total acreage of 31,000 acres reported by the sugar company owning the fourth factory as supplying three factories, two of which were outside the districts included in the study.

sons outside family groups brought into the entire State for the work in 1920 and few or no resident single men engaged for the work in the beet fields. Inasmuch as practically all laborers brought into the State for the work are brought in by the sugar companies, approximately 90 per cent of the beet acreage in the State was probably taken care of by family groups.

In order to locate families in which either a child under 16 or the mother of a child under 6 years of age had worked in the beet fields at least one week during the season of 1920, lists of the beet-field laborers and of the farmers doing their own handwork were secured from the sugar company's agent in each section. As many as possible of the families, both those of farmers and those of laborers, were visited.

ECONOMIC STATUS OF FAMILIES.

A comparatively large number of beet growers in Michigan do their own handwork. Usually the average acreage planted in sugar beets is small.⁵⁰ Even on farms where beets are planted as one of the regular farm crops, the average number of acres in beets was said by factory managers to be only about 10, as compared with an average of 21 acres in Colorado. It was said that the average number of acres per grower was still further reduced by the fact that many farmers and even residents of towns and villages had been induced by the high price of sugar during several years preceding 1920 to plant in sugar beets a small tract of land, from 1 to 5 acres, in order to get the privilege granted by the sugar companies to all growers, irrespective of acreage planted, of buying at factory prices 50 pounds of sugar for each member of the family. These holdings reduced the average number of acres per grower to 5.6. Thus, though Michigan, according to estimates furnished the Children's Bureau by the sugar companies, had but 144,593 acres of beets as compared with the 223,201 acres in Colorado, there were 26,000 growers in the State, two and one-half times the number in Colorado, and 35 per cent of them did their own handwork, as compared with 15 per cent in Colorado.

The fact, too, that securing sufficient satisfactory labor for the beet fields in the season of 1920 seems to have been very difficult, very probably caused many growers who ordinarily hired contract labor to do their own handwork. Labor agents of the sugar companies in the spring of 1920 had had to go far to secure labor. They had been obliged to bring in workers not only from Detroit, Chicago, and the larger cities of Ohio, but also from the mining districts of West Virginia and from small towns in Texas and

⁵⁰ One of the sugar companies, however, operated a farm of 10,000 acres, 860 of which were planted in beets.

even Mexico. There was no large resident population of "beeters" like the Russian-Germans in Colorado. Belgian labor, which had been the prevailing beet-field labor in earlier years, had practically disappeared since the war, and the supply of Central Europeans also had fallen off. The labor turnover was high. In a number of cases cited by the sugar companies' agents 15 or 20 families brought in for the spring work had all disappeared by mid-summer, and it was expected that an entire new lot would have to be brought in for the fall work. Inability to secure labor had led in some places to the formation of crews of day workers, usually boys, but occasionally girls, from 10 to 16 years of age or over. The children generally lived in the towns where the factories were located and were taken out by the sugar-company agent to the fields each day. They were paid a day or piece rate, worked usually about eight hours, and earned from \$2 to \$5 a day. One company reported that their work was not as satisfactory as that of the regular laborers.

In view of the difficulty experienced in securing labor, it is not surprising that many farmers who were accustomed to hiring contract labor for their work had decided to do their own.

Among the 511 families interviewed because either the mother or the children worked in the beet fields, 150, or 29 per cent, were living on their own farms; 72, or 14 per cent, were renting farms, and 289, or 57 per cent, were the families of contract laborers. Of the children in these families, 1,005 were laborers' children; 245 were the children of tenants, and 560 were the children of men who owned farms.

TABLE XXXVI.—*Economic status of family, by age of child; children under 16 years of age in families that worked in beet fields: Michigan group.*

Age of child.	Children under 16 years of age.						
	Economic status of family.						
	Total.	Laborer.		Tenant farmer.		Farm owner.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	1,810	1,005	55.5	245	13.5	560	30.9
Under 5 years.....	679	423	62.3	97	14.3	159	23.4
6 years, under 16.....	1,131	582	51.5	148	13.1	401	35.5

Of the 289 laborers' families only 96 were resident and 193 were nonresident. The fathers in migratory families were usually men who, during the winter, worked in factories, in mines, or on railroads. A few said that they had come to the beet fields because of the high cost of living in the city or because they were out of work, others had wanted to spend the summer in the country, and still others

wanted to settle permanently in the country. The prospects held out by the recruiting agents looked good to city laborers. Seventeen migratory workers said that the representations of the company agent regarding the attractiveness of the work had been their principal reason for coming. The opportunity, always emphasized, of utilizing the labor of the entire family was undoubtedly an inducement also.

The resident laborers were chiefly agricultural workers or factory hands during the winter. They belonged to one of two groups. The first was composed of one-time migratory laborers who had little ambition or initiative and no great earning capacity, and who found it easier to stay on after the beet harvest in their "beet shacks" at a nominal rent and subsist, even though meagerly, on their beet-contract earnings till the spring work began, than to go back to the city and find work for the winter. The other group included a few American families—most of whom had lived in the country all their lives without becoming successful farmers—and former migratory families who had come to work in the beet fields, had liked living in the country better than in the city, and had elected to stay there in the hope that they would sometime own a farm. The father in families of the latter type got work, if he could, in the beet districts or in near-by towns. In some cases for a few months in the winter he left his family in the country and went to the city to earn money. These were the families that would eventually, if things went well, become first tenant farmers and then farm owners. Of the 150 farm owners included in the study, 41 had been beet-field laborers, averaging 4 years at the work in the United States before owning their own land, and 25 others had rented, averaging 3½ years as tenants. Of the 72 tenant farmers included in the study, 52 had worked as laborers before renting farms.

NATIONALITY.

Nativity.

Although well over one-fourth of the children included in the study were of native parentage, the parents were not, save in exceptional cases, from English-speaking stock. Usually they were of Slavic origin, the family having been in this country but one or two generations. Among the foreign born the range of nationalities was much greater than was found in Colorado. Bohemians were the most numerous of the foreign-born groups, with Poles a close second. Mexican labor had but recently appeared in the Michigan beet fields, but 10 per cent of all the laborers' families interviewed in the course of the study were Mexican. There was little difference found between the nationality of resident and of nonresident labor in the Michigan beet fields, except that only one resident

family was Mexican. For the rest Bohemians, Poles and other Slavs, Germans, and Magyars appeared among both transient and resident families.

More Bohemians were in the position of farm owners and tenant farmers than persons of any other nationality, except the American born, but some of each nationality save Mexican were found among farm owners and tenants. The Mexicans did not seem ambitious to become land owners or farm tenants in the beet-growing districts, and in the rare instances in which they were saving money for a definite purpose, they were usually planning to buy a little place in Mexico. Although almost two-thirds of the farm owners and over one-fourth of those renting farms were natives, more than one-third of the farm owners and 70 per cent of the tenants were men of foreign birth who had, as a rule, worked their way up into the landowning and renting class. Most of their children were born in the United States. Of the 679 children under 6, only 25, or 4 per cent, were born outside the United States, and only 17 per cent of those 6 years of age or over were foreign born.

TABLE XXXVII.—Nationality of father, by economic status of family; children under 16 years of age in families that worked in beet fields: Michigan group.

Nationality of father.	Children under 16 years of age.							
	Total.		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	1,810	100.0	1,005	100.0	245	100.0	560	100.0
Native.....	501	27.7	85	8.5	68	27.8	348	62.1
Foreign born.....	1,300	71.8	920	91.5	171	69.8	209	37.3
Other Slavic.....	416	23.0	292	29.1	62	25.3	62	11.1
Bohemian.....	252	13.9	132	13.1	39	15.9	81	14.5
Polish.....	210	11.6	180	18.3	21	8.6	.....	.....
Magyar.....	131	7.2	114	11.3	12	4.9	5	.9
Mexican.....	79	4.4	79	7.9	.....	.....	22	3.9
German.....	77	4.3	50	5.0	5	2.0	.....	.....
Belgian.....	24	1.3	3	0.3	21	8.6	.....	.....
All other.....	111	6.1	61	6.1	11	4.5	39	7.0
Not reported.....	9	.5	.....	.....	6	2.4	3	.5

Knowledge of English.

Most of the fathers had acquired a speaking knowledge of English, but 49 (13 per cent) of the foreign born, 15 of whom were Mexicans, did not speak the language in spite of the fact that most of them had been in the United States 5 years or more. No very great difference was noted among the various Slavic peoples in their ability to use English. Among the Mexicans less than one-half could speak the language. Comparatively few of the latter had been in the United

States more than a few years, whereas the average for all the nationalities was about 10 years. The mothers in the families visited, as is usually the case with immigrants, were less well acquainted than the fathers with the English tongue. Only 56 per cent of all the foreign-born mothers could speak English, the proportion being greatest (63 per cent) among Polish women. Only 1 of the 28 Mexican mothers could speak English; she had been in the United States between 10 and 15 years. The majority of the Mexican mothers, however, had immigrated within 3 years. Only 7 mothers in other groups had been in the country less than 5 years, and the average for all foreign-born mothers was about 10 years.

TABLE XXXVIII.—*Literacy and ability of father to speak English, by number of years in the United States and nationality; fathers in families that worked in beet fields: Michigan group.*

Years in the United States and nationality of father.	Fathers—				
	Total.	Unable to speak English.		Unable to read and write in any language.	
		Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	2 502	49	9.8	36	7.2
Native.....	136			1	.7
Foreign born.....	366	49	13.4	35	9.6
Less than 3 years.....	19	12		7	
3 years, less than 5.....	1	1			
5 years, less than 10.....	78	10	12.8	5	6.4
10 years, less than 15.....	116	11	9.5	11	9.5
15 and over.....	100	9	9.0	8	8.0
Not reported.....	52	6	11.5	4	7.7

¹ Not shown where base is less than 50.

² Excludes 7 fathers who were dead or had deserted, and 2 for whom nationality, years in the United States, ability to speak English, and literacy were not reported.

TABLE XXXIX.—*Literacy and ability of mother to speak English, by number of years in the United States and nationality; mothers in families that worked in beet fields: Michigan group.*

Years in the United States and nationality of mother.	Mothers—				
	Total.	Unable to speak English.		Unable to read and write in any language.	
		Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	2 506	158	31.2	65	12.8
Native.....	144			1	.7
Foreign born.....	362	158	43.6	64	17.7
Less than 3 years.....	25	24		11	
3 years, less than 5.....	1	1			
5 years, less than 10.....	120	58	48.3	14	11.7
10 years, less than 15.....	86	35	40.7	19	22.1
15 years and over.....	78	18	23.1	12	15.4
Not reported.....	52	22	42.3	8	15.4

¹ Not shown where base is less than 50.

² Excludes 4 mothers who were dead or had deserted, and 1 for whom nationality, years in the United States, ability to speak English, and literacy were not reported.

Whereas practically all the native-born fathers and mothers were literate, 35 foreign-born fathers and 64 foreign-born mothers were not able to read or write in any language, the largest proportion of illiterates, both of fathers and mothers being found among the Mexicans. These men and women are even more helpless, of course, than those parents who, while they speak no English, can read and write their own language. Both are at a disadvantage not only in transacting their business and safeguarding their interests, but also in rearing their children. Instruction in English is the first step in putting them in touch with forces which will assist them to overcome some of the handicaps of a defective early education, especially in regard to the intelligent care and training of their children.

CHILD LABOR.

Number and ages of children and duration of work.

In the 511 families visited were 763 children between 6 and 16 years of age who had worked in the beet fields in 1920. Only 1 in 5 had reached the age of 14 or 15, while 1 in 4 was less than 10 years of age. Over one-half were from 10 to 13 years of age. In some families no child was considered too young to count as a beet-field worker. One Hungarian father, a miner from West Virginia, who said that he had come to the beet-growing country because his children were too young to work in the mines but could help "in beets," had all 4 of his children at work in the fields, the oldest 12, the youngest only 5 years of age. Four children under the age of 6 years were reported by their parents as working. In most families, however, the tendency was to spare the very youngest children. A Polish laborer, for example, whose boys of 11 and 13 years helped with his beet crop, would not let his 5- and 6-year-old boys work, saying, "Children have to be careful of and beets is too hard for little ones." Nevertheless, in families in which it appeared to be customary for children to work, judging by the fact that at least one older child was a beet-field worker,⁵⁷ almost one-fifth of the 6-year-old children and two-fifths of those who were 7 years of age were at work. At 8 three-fifths of the children in these families and at 11 practically all, had begun working in the beet fields.

Both girls and boys work in the beet fields, but in the families studied there were somewhat fewer workers among the girls in proportion to their numbers than among the boys. Only one-fourth of the boys, but almost two-fifths of the girls, between 6 and 16 years of age were reported as not working. Not only the youngest

⁵⁷ The totals on which are based this proportion and the following proportions of children of different ages at work exclude 187 children: (1) The eldest working child in each family and (2) children who were the only child workers in their respective families. For an explanation of these exclusions see p. 19, note 18.

girls but those of all ages, with the possible exception of 11- and 12-year-old children appeared to be less likely to be set at field work than boys of the same age. This may be due partly to custom. In some families, no doubt, at least one girl is kept at home to care for younger children and to help with the housework or, as in the case of one 13-year-old girl, to do all the housework while the mother works in the fields.

With few exceptions the children work for their own parents, either on the acreage for which the father has contracted or on the home farm. Seventeen children in the present study had hired out to work, usually after the work on the family acreage was completed.

TABLE XL.—*Age of child, by economic status of family; children between 6 and 16 years of age working in beet fields: Michigan group.*

Age of child.	Children between 6 and 16 years of age working in beet fields.							
	Total.		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	763	100.0	361	100.0	105	100.0	297	100.0
6 years, under 7.....	16	2.1	9	2.5	2	1.9	5	1.7
7 years, under 8.....	38	5.0	23	6.4	5	4.8	10	3.4
8 years, under 9.....	52	6.8	28	7.8	6	5.7	18	6.1
9 years, under 10.....	91	11.9	39	10.8	13	12.4	39	13.1
10 years, under 11.....	93	12.2	43	11.9	12	11.4	38	12.8
11 years, under 12.....	105	13.8	57	15.8	14	13.3	34	11.4
12 years, under 13.....	114	14.9	58	16.1	13	12.4	43	14.5
13 years, under 14.....	101	13.2	41	11.4	18	17.1	42	14.1
14 years, under 15.....	76	10.0	40	11.1	6	5.7	30	10.1
15 years, under 16.....	77	10.1	23	6.4	16	15.2	38	12.8

The handwork on the beet crop in Michigan as in Colorado spreads over a period of between 5 and 6 months, beginning about the last of May. At the time the study was made, during the month of August, the beet harvest, which would add from 1 or 2 to 6 weeks to the work, had not begun, so that it is not possible to state how many weeks during the season of 1920 the children covered by the study worked. On only the first 2 processes—blocking and thinning, and hoeing—more than half of the 763 working children had worked at least 4 weeks, 35 per cent from 6 to 13 weeks, and about one-tenth between 9 and 13 weeks. It would appear that the younger children were almost as likely as the older ones to be kept at the work for a number of weeks, since the proportions of those under 10 years of age working at least 4 weeks and working from 6 to 13 weeks were practically the same as for all the children. Whether a child was in a laborer's,

a tenant's, or a farm owner's family made considerably more difference than did his age in the number of weeks that he worked. Thus, four-fifths of the laborers' children had worked 4 weeks or more, whereas only two-fifths of the tenants' children and one-fourth of the farm owners' had worked so long; and while three-fifths of the children whose fathers had contract work had spent from 6 to 13 weeks in the beet fields, less than one-fourth of the farm renters' children, and only 7 per cent of the children of farmers owning their own land had done so. Because of the small beet farms in the districts visited there is no comparison between the tax on the strength and endurance in working on the home beet acreage and in working throughout the season as contract laborers. Almost half the farmers owning their land worked less than 5 acres, and only 5 took care of as many as 20 acres, whereas more than half the laborers reporting acreage had contracted for at least 25 acres. Thus, work on the beet crop for farmers' children seldom lasted long or necessitated extreme hours. Only 8 per cent of the farm owners' children and 23 per cent of the tenants' children had worked 6 weeks or more, whereas 61 per cent of the laborers' children had worked at least 6 weeks.

TABLE XLI.—Number of weeks worked, by age of child; children between 6 and 16 years of age working in beet fields: Michigan group.

Age of child.	Children between 6 and 16 years of age working in beet fields.														
	Total.	Number of weeks worked. ¹													
		Less than 1.		1		2		3		4		5		6	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	763	10	1.3	114	14.9	85	11.1	91	11.9	66	8.7	71	9.3	93	12.2
6 years, under 7.....	16	2	.....	1	.....	1	.....	2	.....	2	.....	.....	.....	1	.....
7 years, under 8.....	38	.....	.....	4	.....	3	.....	3	.....	2	.....	4	.....	6	.....
8 years, under 9.....	52	.....	.....	10	19.2	5	9.6	8	15.4	4	7.7	4	7.7	8	15.4
9 years, under 10.....	91	1	1.1	17	18.7	10	11.0	9	9.9	7	7.7	9	9.9	7	7.7
10 years, under 11.....	93	1	1.1	12	12.9	13	14.0	13	14.0	8	8.6	8	8.6	10	10.8
11 years, under 12.....	105	2	1.9	11	10.5	19	18.1	9	8.6	11	10.5	10	9.5	11	10.5
12 years, under 13.....	114	1	1.8	21	18.4	10	8.8	14	12.3	4	3.5	11	9.6	17	14.9
13 years, under 14.....	101	1	1.0	14	13.9	9	8.9	11	10.9	13	12.9	8	7.9	14	13.9
14 years, under 15.....	76	1	1.3	6	7.9	9	11.8	10	13.2	7	9.2	7	9.2	8	10.5
15 years, under 16.....	77	.....	.....	18	23.4	6	7.8	12	15.6	8	10.4	10	13.0	11	14.3

¹ Not shown where base is less than 50.

TABLE XLI.—Number of weeks worked, by age of child, etc.—Continued.

Age of child.	Children between 6 and 16 years of age working in beet fields.															
	Number of weeks worked. ¹															
	7		8		9		10		11		12		13		Not reported.	
	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	45	5.9	64	8.4	27	3.5	28	3.7	7	0.9	2	0.3	2	0.3	58	7.6
6 years, under 7.....	2	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
7 years, under 8.....	5	.....	7	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	3	.....
8 years, under 9.....	4	7.7	1	1.9	2	3.8	1	1.9	1	1.9	.....	.....	.....	.....	4	7.7
9 years, under 10.....	6	6.6	10	11.0	6	6.6	2	2.2	2	2.2	.....	.....	.....	.....	5	5.5
10 years, under 11.....	7	7.5	5	5.4	4	4.3	4	4.3	1	1.1	.....	.....	.....	.....	7	7.5
11 years, under 12.....	4	3.8	11	10.5	4	3.8	3	2.9	.....	.....	.....	.....	1	1.0	9	8.6
12 years, under 13.....	7	6.1	7	6.1	5	4.4	5	4.4	2	1.8	2	1.8	.....	.....	7	6.1
13 years, under 14.....	4	4.0	9	8.9	2	2.0	4	4.0	.....	.....	.....	.....	.....	12	11.9	
14 years, under 15.....	6	7.9	7	9.2	3	3.9	6	7.9	1	1.3	.....	.....	1	1.3	4	5.3
15 years, under 16.....	.....	.....	4	5.2	1	1.3	2	2.6	.....	.....	.....	.....	.....	.....	5	6.5

¹ Not shown where base is less than 50.

In the absence of any legal restrictions on agricultural work other than those imposed by the compulsory school attendance law, the children work as many hours a day as the parents wish or as the crop seems to require, and there is the greatest variety in the conditions under which the work is done. In one farmer's family, the 13- and 15-year-old girls averaged only 4 hours daily in the beet fields, working in the cool of the day, morning and evening, and completing the spring and summer work in 3 weeks. Brothers 10 and 14 years of age in a native family were reported as working "3 or 4 hours a day during several weeks, but not nearly every day." A tenant farmer said that he had not wanted his children to work, but had been obliged to have them help because contract labor was so unsatisfactory. His 13-year-old daughter and twin boys of 11 had worked 7 hours a day for 2 weeks. But instances of very long hours were much more common. Thus Anna, the 11-year-old child of a Polish laborer, began her field work at 5 o'clock in the morning, leaving the field at 8 at night, with only 1 hour out for dinner. Her work in thinning and hoeing had lasted 7 weeks. The children of another Polish laborer, Helen, aged 14, Stevie, 12, and Julia, 10, worked from 5 a. m. until 8.30 p. m., with one-half hour for breakfast and one-half hour for dinner. At the time of the agent's visit all the members of this family were working very hard. They had spent over 9 weeks on the beet crop, and had not begun pulling and topping. Another example of a 14-hour day is found in the case of a Hungarian boy of 13 years, whose work "in the beets" had lasted 4 weeks. His was a tenant family renting its land for the first season after

8 years as beet-field laborers. Even more extreme conditions of work were occasionally encountered in the course of the survey. Thus the 7-year-old child of a Mexican laborer had worked more than 8 weeks $11\frac{1}{2}$ hours a day; the daughter of a Slovenian laborer, aged 6 years, had worked 9 weeks, from 8 to 11 hours a day, besides helping with the housework and gardening, and carrying water; 5-year-old Manuel with his 2 brothers aged 7 and 10, respectively, spent an $11\frac{1}{2}$ -hour day in the beet fields, their work continuing between 8 and 9 weeks. The effort put into the work differed also from family to family. Thus one group of workers, consisting of father, mother, and 3 children from 10 to 13 years of age, reported that they had worked $10\frac{1}{2}$ hours a day for 10 weeks, caring for only $12\frac{1}{2}$ acres; whereas another family, in which the workers were the father and 4 children, the oldest 12 and the youngest 7, cared for 50 acres, working $12\frac{1}{2}$ hours a day for a little over 6 weeks. A child of 11, with his parents, working 13 hours a day for 9 weeks cared for 41 acres.

These varying conditions of work give rise to widely varying differences of opinion as to the difficulties of the work. One father found it "much easier than work in a steel mill"; another, who had worked in the cotton fields of Texas and whose maximum working day in the beet fields was 7 hours, thought it "not so hard as cotton"; one family reported that the children did not get very tired, as they worked only every other day, and then not longer than 8 hours. A 13-year-old girl and her two younger brothers, who had thinned 7 hours a day, said that they did not mind the work, except that it took away their play time. These families were usually working small acreages and were able to take their own time in doing the work. One mother stated that the work was no harder than other field work, if it was not too prolonged; she and her children never worked, however, more than 6 hours a day. Several maintained that it was impossible to work more than 4 or 5 hours a day without being exhausted. A mother, who worked 10 hours a day, said that she was so tired at night that she "could hardly stand it," though she was only 29 years old and an experienced worker. One mother said that her hands became so sore that she could cry, and the work made her "feel sick all over." Several fathers, who had been miners, declared that the work in the beet fields was much harder than mining. Swollen arms and aching backs were often complained of, especially among those doing the work for the first time. A Serbian mother, whose 14-year-old boy worked 14 hours in the field, told the agent that "the children cried this year when their father told them we would do beet work again."

Hours and duration of work in each process.

Blocking and thinning.—All except 4 of the 763 children in the study who worked took part in the spring process, about one-

fifth of them doing only the thinning. The youngest working children were engaged in thinning. One-fourth of those who did the work—whether they were the children of contract laborers or worked on their parents' farms, and proportionately as many girls as boys—were less than 10 years old, more than half were under 12, and only one-fifth were as much as 14 years of age. Seven per cent of the workers were under 8 years of age—ten 6-year-old boys and 26 who were 7 years of age, and 18 girls of 6 and 7 years.

TABLE XLII.—Daily hours thinning and blocking, by age of child; children between 6 and 16 years of age working in beet fields: Michigan group.

Daily hours thinning and blocking.	Children between 6 and 16 years of age working in beet fields.										
	Total.	Age.									
		6 years, under 7.	7 years, under 8.	8 years, under 9.	9 years, under 10.	10 years, under 11.	11 years, under 12.	12 years, under 13.	13 years, under 14.	14 years, under 15.	15 years, under 16.
Total.....	763	16	38	526	91	93	105	114	101	76	77
Did not work thinning and blocking.....	4			1		1	1		1		
Worked thinning and blocking.....	759	16	38	51	91	92	104	114	100	76	77
Less than 4 hours.....	14	2	1		2	3	1	4	1		
4 hours, less than 5.....	20			1	4	4	1	2	4		4
5 hours, less than 6.....	15	1		1	2	4		4			3
6 hours, less than 7.....	26		3		4	3	5	2	5	1	3
7 hours, less than 8.....	48		1	4	4	5	9	5	8	6	6
8 hours, less than 9.....	76		3	5	12	9	10	12	7	10	8
9 hours, less than 10.....	112	1	3	6	16	11	16	19	16	13	11
10 hours, less than 11.....	186	4	11	8	19	21	24	24	33	16	26
11 hours, less than 12.....	90	1	8	8	5	12	14	16	9	9	8
12 hours, less than 13.....	67	3	2	8	11	6	9	12	6	8	2
13 hours, less than 14.....	33	1	1	2	3	5	4	8	2	5	2
14 hours and over.....	29				1	3	3	3	3	5	2
Not reported and irregular.....	52	3	5	8	8	6	8	3	6	3	2

The early summer days are long, the work pressing, and the working day is extended accordingly. For the laborers' families work usually started at 6 a. m., though 5 or 5.30 was sometimes given as the hour of beginning, and even 4 o'clock was reported. The laborers' families usually took the shortest possible time for meals, and worked till 6, 7, and sometimes 8 p. m., or later. Even when meal time is excluded these hours indicate a long working day. Almost two-thirds of the children, only slightly fewer girls than boys in proportion to their numbers, were reported as working 9 hours or more a day. The largest group, both boys and girls, amounting to a little over one-fourth of the boys and one-fifth of the girls, reported 10 hours daily; 26 per cent of the boys and 29 per cent of the girls reported from 11 to 15 hours' daily work in the fields.

It was the children of contract laborers who worked the longest hours—practically 9 out of 10 of them reported a working day of 9

hours or more and 5 out of 10 had worked from 11 to 15 hours. But while fewer farmers' children spent so long a day at field work, less than 5 per cent reporting as much as 11 hours a day, almost half had worked 9 hours or more.

TABLE XLIII.—Daily hours thinning and blocking, by economic status of family; children between 6 and 16 years of age working in beet fields: Michigan group.

Daily hours thinning and blocking.	Children between 6 and 16 years of age working in beet fields.							
	Total.		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	763		361		105		297	
Did not work thinning and blocking.....	4						4	
Worked thinning and blocking.....	759	100.0	361	100.0	105	100.0	293	100.0
Less than 4 hours.....	14	1.8	3	.8	1	1.0	10	3.4
4 hours, less than 5.....	20	2.6	1	.3	7	6.7	12	4.1
5 hours, less than 6.....	15	2.0	3	.8			12	4.1
6 hours, less than 7.....	26	3.4	2	.6	4	3.8	20	6.8
7 hours, less than 8.....	48	6.3	11	3.1	11	10.5	26	8.9
8 hours, less than 9.....	76	10.0	10	2.8	22	21.0	44	15.0
9 hours, less than 10.....	112	14.8	46	12.7	10	9.5	56	19.1
10 hours, less than 11.....	186	24.5	81	22.4	33	31.4	72	24.6
11 hours, less than 12.....	90	11.9	84	23.3	1	1.0	5	1.7
12 hours, less than 13.....	67	8.8	59	16.3	6	5.7	2	.7
13 hours, less than 14.....	33	4.4	33	9.1				
14 hours and over.....	20	2.6	15	4.2	2	1.9	3	1.0
Not reported and irregular.....	52	6.9	13	3.6	8	7.6	31	10.6

The farmers' children spent only a few weeks at the work. Sevenths of the farm owners' children, and almost half the children of the tenant farmers, reported that their spring work had taken less than three weeks. Less than one-seventh of the laborers' children, on the other hand, had spent less than three weeks blocking and thinning, and more than one-fourth had worked throughout the duration of the process, that is, for six weeks or more, passing on to a new field as soon as the work on one was completed. A few farmers' children had hired out to other farmers when the work on their own acreage was completed, adding to the number of weeks worked, but only 19 had worked as much as six weeks in the spring process.

Crawling along in the dirt for nine hours or more a day for several weeks is hard work for children, even if they do only the thinning. Four-fifths of the children engaged in the spring work did blocking also. A girl-mother of 17 years, who had worked in the beet fields since she was 14, related how her "arms used to get so tired with the blocking that after going to bed they wouldn't stay still—they'd just

move backwards and forwards as if they still held the hoe." Another experienced worker, a young Bohemian woman, said that after a day of thinning she was so tired at night that she could hardly stand it, and added, "If you don't wear gloves you wear your fingers down to the quick."

Hoeing.—Almost one-fifth of the working children were not required to do hoeing, which is heavier work than thinning. Nevertheless, 623 children between 6 and 16 years of age had hoed and 3 other children, only 5 years of age, were reported by their parents as working in the process for 10 or 11 hours a day. About one-fourth of both girls and boys doing this work were under 10 years of age, including 26 boys and 8 girls who were only 6 or 7 years of age; and well over half the workers, both girls and boys, were from 10 to 13 years of age.

TABLE XLIV.—Daily hours hoeing, by age of child; children between 6 and 16 years of age working in beet fields: Michigan group.

Daily hours hoeing.	Children between 6 and 16 years of age working in beet fields.										
	Total.	Age.									
		6 years, under 7.	7 years, under 8.	8 years, under 9.	9 years, under 10.	10 years, under 11.	11 years, under 12.	12 years, under 13.	13 years, under 14.	14 years, under 15.	15 years, under 16.
Total.....	763	16	38	52	91	93	105	114	101	76	77
Did not work hoeing.....	140	10	10	9	20	21	25	15	11	10	9
Worked hoeing.....	623	6	28	43	71	72	80	99	90	66	68
Less than 4 hours.....	11	1	1	1	1	3	1	3	1	1	1
4 hours, less than 5.....	19	.....	.....	1	3	4	1	4	2	2	2
5 hours, less than 6.....	13	.....	.....	1	2	3	.....	4	.....	.....	3
6 hours, less than 7.....	27	.....	2	.....	4	4	6	1	6	1	3
7 hours, less than 8.....	38	2	2	3	4	4	5	5	5	3	5
8 hours, less than 9.....	64	.....	3	4	8	6	9	9	8	8	9
9 hours, less than 10.....	106	1	.....	8	13	10	13	21	17	14	9
10 hours, less than 11.....	145	.....	9	7	15	17	16	19	26	15	21
11 hours, less than 12.....	63	.....	6	5	3	10	7	13	7	6	6
12 hours, less than 13.....	63	2	3	5	12	6	7	14	4	8	2
13 hours, less than 14.....	15	.....	.....	1	1	2	3	3	2	2	1
14 hours, and over.....	16	.....	.....	.....	1	2	3	1	3	4	2
Not reported and irregular.....	43	1	2	8	4	1	9	2	9	2	5

The hours did not differ greatly from those that were customary in the spring work. Four hundred and eight children, including 63 per cent of the girls and 67 per cent of the boys, had hoed for 9 hours or more a day; and about one-fourth, slightly more girls than boys proportionately, reported that their average working day had been 11 hours or more.

More laborers' children than the children of farmers had a very long working day, though many of the latter also spent long hours at the field work. For example, over four-fifths of the laborers' children reported that they had averaged from 9 to 14 hours or

more a day in hoeing, while 56 per cent of the tenants' and 47 per cent of the farm owners' children spent 9 or more hours a day at the work. Rarely did any farmer's child report that he had hoed more than 10 hours a day.

TABLE XLV.—Daily hours hoeing, by economic status of family; children between 6 and 16 years of age working in beet fields: Michigan group.

Daily hours hoeing.	Children between 6 and 16 years of age working in beet fields.							
	Total.		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	763		361		105		297	
Did not work hoeing.....	140		60		34		46	
Worked hoeing.....	623	100.0	301	100.0	71	100.0	251	100.0
Less than 4 hours.....	11	1.8	1	.3	1	1.4	9	3.6
4 hours, less than 5.....	19	3.1	2	.7	5	7.0	12	4.8
5 hours, less than 6.....	13	2.1	3	1.0			10	4.0
6 hours, less than 7.....	27	4.3	2	.7	4	5.6	21	8.4
7 hours, less than 8.....	38	6.1	15	5.0	6	8.5	17	6.8
8 hours, less than 9.....	64	10.3	17	5.7	12	16.9	35	13.9
9 hours, less than 10.....	106	17.0	47	15.6	10	14.1	49	19.5
10 hours, less than 11.....	145	23.3	59	19.6	25	35.2	61	24.3
11 hours, less than 12.....	63	10.1	57	18.9	1	1.4	5	2.0
12 hours, less than 13.....	63	10.1	57	18.9	2	2.8	4	1.6
13 hours, less than 14.....	15	2.4	15	5.0				
14 hours and over.....	16	2.6	14	4.7	2	2.8		
Not reported and irregular	43	6.9	12	4.0	3	4.2	28	11.2

The duration of the hoeing was, like that of the blocking and thinning, much longer for the children of laborers than for the children of tenant farmers and farm owners. The largest number in each of the three groups had worked between 2 and 3 weeks, but almost one-third of the laborers' children had worked 3 weeks or more, while only one-ninth of the children of tenants and only 4 per cent of the children of farm owners reported spending 3 weeks or more hoeing. Moreover, two-fifths of the farm owners' children as compared with only 5 per cent of the laborers' children had worked less than 1 week.

The length of time spent in hoeing does not depend entirely on the acreage. The time spent at the work as well as the ease with which it may be done, depends upon how thoroughly the farmer cultivates. Thus one family reported that a 5-acre field in good condition was hoed in a day, whereas another field containing only 6 acres required 10 days for the hoeing, because it was so weedy and hard to work. Numerous complaints were made by the families visited regarding the poor cultivating that was done, and it was said that the hoeing had been particularly hard that season on most of the farms because the weeds had been so bad. One father and mother reported that the

ground was so hard that they and their 2 children had had to start early and work hard to "make three-fourths of an acre a day." Another father had refused to hoe, he said, until the farmer cultivated, declaring "I'm not going to kill my children with weeds."

The study in Michigan was completed before the pulling and topping began, but it is probable that in essential details conditions did not differ greatly from those in Colorado.

Number of seasons at work.

The children in Michigan were much less experienced workers than those in the Colorado families visited. Well over two-fifths of those who worked in the beet fields were spending their first season at the work; even when the children under 10 are excluded, 35 per cent were doing their first season's work. The majority of those over 10 years of age had been working at most but 2 seasons, and only about one-tenth had been working 5 seasons or more. Those who had been working 5 seasons or more constituted, however, almost three-tenths of the 15-year-old, one-fifth of the 14-year-old, and one-tenth of the 13-year-old children. One 13-year-old boy had been working ever since he was 6; similarly four 14-year-old children—3 girls and 1 boy—had worked 8 seasons; and six 15-year-old children, all except 1 of whom were boys, had worked since they were 8 years of age. The majority of the children had begun to work in the beet fields before they were 10 years of age. About one-fourth had begun before they were 8 years old, about 4 per cent when only 6. One boy told the agent that he had begun to do thinning when only 5 years of age, "but," he said, "they had to lick me a lot to make me do it."

TABLE XLVI.—Number of seasons in beet fields,¹ by age of child; children between 6 and 16 years of age: Michigan group.

Age of child.	Children between 6 and 16 years of age.								
	Total.	Did not work in beet fields.		Number of seasons in beet fields. ¹					
				1		2		3	
		Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Total.....	1,131	368	32.5	332	29.4	245	21.7	81	7.2
6 years, under 7.....	150	134	89.3	16	10.7				
7 years, under 8.....	124	86	69.4	28	22.6	10	8.1		
8 years, under 9.....	115	63	54.8	39	33.9	10	8.7	2	1.7
9 years, under 10.....	119	28	23.5	50	42.0	32	26.9	3	2.5
10 years, under 11.....	118	25	21.2	49	41.5	34	28.8	9	7.6
11 years, under 12.....	117	12	10.3	44	37.6	43	36.8	11	9.4
12 years, under 13.....	121	7	5.8	43	35.5	41	33.9	17	14.0
13 years, under 14.....	108	7	6.5	33	30.6	30	27.8	21	19.4
14 years, under 15.....	80	4	5.0	17	21.3	22	27.5	12	15.0
15 years, under 16.....	79	2	2.5	13	16.5	23	29.1	6	7.6

¹ Includes season of 1920.

TABLE XLVI.—Number of seasons in beet fields,¹ by age of child, etc.—Con.

Age of child.	Children between 6 and 16 years of age.											
	Number of seasons in beet fields. ¹											
	4		5		6		7		8		Not reported.	
	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Total.....	46	4.1	19	1.7	13	1.1	10	0.9	11	1.0	6	0.5
6 years, under 7.....												
7 years, under 8.....												
8 years, under 9.....											1	.9
9 years, under 10.....	4	3.4									2	1.7
10 years, under 11.....	1	.8										
11 years, under 12.....	5	4.3	1	.9							1	.9
12 years, under 13.....	5	4.1	3	2.5	2	1.7	1	.8			2	1.7
13 years, under 14.....	8	7.4	4	3.7	2	1.9	2	1.9	1	.9		
14 years, under 15.....	10	12.5	4	5.0	3	3.8	4	5.0	4	5.0		
15 years, under 16.....	13	16.5	7	8.9	6	7.6	3	3.8	6	7.0		

¹ Includes season of 1920.

Amount of work per child.

It was even more difficult in Michigan than in Colorado to secure estimates as to the amount of work children could do. The families had had less experience as laborers—the average number of years in the work was less than three in Michigan, while it was seven in Colorado—and they could not gauge their children's capacity so well. But according to the statements of the 113 families making an estimate, children averaged about one-fourth of an acre a day in blocking and thinning, or one-half of an acre for thinning alone, while in hoeing they could cover one-half of an acre in a day's work.

In 244 families of contract laborers included in the present study, each working child during the season had cared for an average of 4.1 acres, somewhat less than one-half the number of acres—9—cared for on the average by each adult in these families.^{57a} That is, each worker did all the blocking and thinning and hoeing during the season on the specified number of acres, though some workers may have taken longer to do the same amount of work. The average number of acres cared for per child is less for the Michigan than for the Colorado workers, both actually and in proportion to the average acreage per adult, a fact which may be due to the relative inexperience of many of the Michigan workers and possibly to the fact that the Colorado resident beet-field workers are unusually thrifty and perhaps keep their children at the work more steadily.

^{57a} See footnote 25, p. 36.

EDUCATION OF THE CHILDREN.

The compulsory school attendance law and its enforcement.

Work in the beet fields had resulted in loss of schooling for a majority of the school children covered by the survey, including children in resident as well as nonresident families. According to the compulsory attendance law of Michigan, every child between the ages of 7 and 16 years who is physically able to do so must attend school during the entire school session unless he has been excused to go to work, which he may be when he has completed the eighth grade.⁵⁸ For most employments, but not including agriculture, the child must obtain a permit which can not be secured for work during school hours until he is 15. A child over 14 years of age, however, who has completed the sixth grade may be excused from school attendance by the county commissioner of schools or city superintendent of schools, on recommendation of the district board, if his "services are essential to the support" of his parents.

Practically all the children included in the survey who legally should have been in school had attended school for some time during the school year preceding the survey but during the beet season attendance was in most cases unsatisfactory. As in many rural areas, there were too few attendance officers to insure adequate enforcement of the law. In fact each of the counties in which were located the districts studied had but one truant officer. No one man, even though constantly on duty, can handle the rural school population of an entire county. While the system in Michigan, under which the truant officer is appointed by the county commissioner of schools⁵⁹ and is responsible to him, has decided advantages over the district system, such as that found in Colorado,⁶⁰ the advantages to be gained by the larger unit are not enjoyed if the force is inadequate. Prompt action is impossible unless the number of attendance officers is sufficient, and the lack of such action results in situations like that described by one farmer who told the bureau agent that he had kept his boy out of school to help with the beet harvest and that by the time he was notified that the child must be sent to school the work was all done, "So I didn't care."

The county commissioner of schools in one of the counties included in the survey, asks, "What can one truant officer do with 162 school boards, 200 teachers, and 7,000 children scattered over 900 square miles of territory?" He further states:

⁵⁸ Howell's Annotated Statutes, 1913, sec. 10110, as amended by Acts of 1917, Act No. 109. A child under 9 years of age living more than 2½ miles from a schoolhouse is not required to attend unless free transportation is provided, and pages or messengers in either house of the legislature are also exempted.

⁵⁹ Graded districts and cities may have their own attendance officers, responsible to the graded district or city superintendent of schools.

⁶⁰ See p. 37.

* * * Children who are over 14 and have passed the sixth grade may be excused by the county commissioner to help at home if the local school board will recommend it and if such help is absolutely necessary. Some boards have told me naively that they dislike refusing a favor to a neighbor, so they sign the recommendation for the sake of peace. That puts it up to the county school office to try to determine the real necessity of the case. Fortunately this office is not anxious for peace at the price of a child's future. Some parents not only overemphasize their need, but willfully misrepresent the child's age or grade. If it is a transient family, it is practically impossible to get records and we must accept the statement of the parents. We are often asked to excuse children as young as 7 years. When permits are refused, the children are sometimes kept out anyway, and the young, timid, untrained teacher, to whom the law and the procedure are new, usually fails to report them promptly as truants, and by the time we hear of it the work for which they were wanted is done. Too much local influence brought to bear on teacher and board, the very limited horizon of some teachers, boards, and parents, long distances and poor roads, uncertain rural mail and telephone service, and an inadequate force of attendance officers in the county office are the conditions which are loading the burden of the shortage of farm labor onto the youthful shoulders of the children. * * * The executive committee of our county farm bureau has stated as its official opinion that the demand for child labor is more a habit than a need.

By requiring a parent who wished to have his child excused from school attendance on the ground of necessity to appear at the office of the county school commissioner before the request was acted upon—in the meantime insisting that the child must be kept in school every day—and through close cooperation with the teachers in rural schools, the school commissioner in this county was making a special effort to keep in school children who would have been withdrawn unnecessarily for farm work.

In the case of migratory families, or even those of resident laborers newly settled in the district, it was even less difficult than in farmers' families for the parents to keep their children out of school if they wished to do so. Families were often not included in the school census, even if living in the district at the time of the census taking, unless they were known to be permanently settled. Thus it was quite possible for a family of beet-field laborers, who had come to live in a rural neighborhood, to keep the children out of school not only during the beet season but also during the entire school year without receiving any notification that the children must be sent to school.

In one family, for example, three little girls, all of school age, worked throughout the beet harvest, and on a snowy day in December started to the nearest school for the first time. Getting wet and cold on the way, they turned back, and, had colds resulting from the exposure, they made no further attempt to enter school. When visited the following August they had lived for over 16 months in the same house without having had any notice whatever taken of them by the school authorities.

According to the statements made by parents three-fourths of all the children of school age in the study, including four-fifths of the

children of contract laborers and two-thirds of the children of farmers, had had absences from school on account of their work on the beet crop; almost half the children for whom duration of absence was reported and three-fourths of those in contract laborers' families had been absent for this purpose more than 4 school weeks. A few—27 laborers' and 10 farmers' children—had been absent 10 weeks or more because of their beet-field work.

When absences for field work are added to the inevitable absences for illness and for stormy weather and bad roads the result is a school attendance so brief and so interrupted as to make it almost impossible for the children to receive an elementary education by the time they reach the age of 14, or even 16.

School attendance of children in the families visited.

School-attendance records for children in the families visited were secured in as many cases as possible. Owing to the fact that the schools were not in session during the survey, and teachers' records were therefore not accessible, it was necessary to postpone securing school data until late November and early December, and at this time, besides the usual difficulty of tracing down the complete record for a year, the roads to the rural schools were in many cases impassable for automobiles. As a result only 461 records were secured, almost all of which were for resident children. The effort made in half a dozen cities to trace the families of migratory workers met with little success.

The school attendance of resident workers' children is undoubtedly more satisfactory than that of nonresident children. Nevertheless the records for these relatively favorably situated children show that the average attendance was but 78 per cent of the average school term—72 per cent for contract laborers' and for tenant farmers' children and 85 per cent for the children in farm owners' families. This means that the average child in the laborers' families lost 9 weeks of school, while many must have lost considerably more time; and that even in the farm owners' families the children averaged nearly 6 weeks out of school. In addition, a number of schools, as in Colorado, gave a "beet vacation" during which, by vote of the school board, school was closed. This vacation usually lasted about 2 weeks. Although it affected the whole school, and so would not have had any particular effect on the attendance or retardation of working children more than others, it tended to shorten further a school term already much curtailed by absence for field work. About one-tenth of the children for whom school records were obtained had had such a vacation, 30 of whom were farm owners' children; 12, tenants' children; and only 6, laborers' children.

Retardation of children in the families visited.

On the basis of the generally accepted standard,⁶¹ a large proportion of the children in the families engaged in beet-field work were over age for the grade that they had attained.⁶² Thus, among 571 children between 8 and 16 years of age living all the year round in the immediate vicinity of the beet farms, 197 (35 per cent) were retarded in school, a number of them 2 years or more. It is significant in view of the less satisfactory school attendance among beet laborers' children that considerably over twice as many of them as of farm owners' children, in proportion to their numbers, had failed to reach grades which were normal for their years. While a child's progress in school is influenced by many factors, the importance of any one of which it is impossible to estimate, irregular school attendance is unquestionably one of the most influential. Absence for work in the beet fields makes it difficult for the children to proceed satisfactorily with their school work on their return to school after the harvest, not only because they have missed the earlier instruction but also because in most cases they are physically tired. Whether or not any permanent physical injury is done, a child who has been doing hard outdoor work for 10 or 11 hours a day for 4 or 5 weeks or more is bound to be more or less tired physically and in no condition to put forth the unusual mental effort necessary to make up the school work which he has missed by his absence. The teachers reported almost unanimously that the first few weeks back in school found the children tired, sleepy, and listless.

Unfortunately there are available no figures with which these percentages of retardation may fairly be compared. Average rates of retardation are available only for children attending city schools,⁶³ whereas almost all the resident beet-field workers attended rural schools.

⁶¹ See p. 42.

⁶² Late entrance into school may result in a child's being above the standard age for his grade, but the retardation figures in the present study were affected by this factor little if at all. Practically all the children entered school before the age of 8, the majority when they were 6 or 7 years of age.

⁶³ That is, communities with a population of 2,500 or more. See Statistics of City School Systems, United States Bureau of Education Bulletin, 1920, No. 24, p. 7. Washington, 1920.

TABLE XLVII.—*Per cent of attendance, by economic status of family; resident children between 6 and 16 years of age attending school: Michigan group.*¹

Economic status of family.	Children between 6 and 16 years of age attending school specified per cent of school term.								
	Total.	Less than 50.		50, less than 60.		60, less than 70.		70, less than 80.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	977	28	2.9	31	3.2	58	5.9	85	8.7
Laborer.....	482	10	2.1	16	3.3	33	6.8	31	7.1
Tenant farmer.....	132	13	9.8	10	7.6	13	9.8	24	18.2
Farm owner.....	363	5	1.4	5	1.4	12	3.3	27	7.4

Economic status of family.	Children between 6 and 16 years of age attending school specified per cent of school term.							
	80, less than 90.		90, less than 100.		100 and over. ²		Not reported.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	124	12.7	121	12.4	11	1.1	519	53.1
Laborer.....	18	3.7	24	5.0	2	.4	345	71.6
Tenant farmer.....	20	15.2	17	12.9	.....	.....	35	26.5
Farmer owner.....	86	23.7	80	22.0	9	2.5	139	38.3

¹ Includes 7 children who left school during or at end of school year.

² See p. 42.

TABLE XLVIII.—*Retardation, by economic status of family; resident children between 8 and 16 years of age in beet-field workers' families: Michigan group.*

Economic status of family.	Resident children between 8 and 16 years of age.						
	Total.	Retarded.		Normal.		Advanced.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	571	197	34.5	374	55.0	60	10.5
Laborer.....	141	72	51.1	57	40.4	12	8.5
Tenant farmer.....	111	50	45.0	52	46.8	9	8.1
Farm owner.....	319	75	23.5	205	64.3	39	12.2

The children of migratory workers were at an even greater disadvantage as far as school attendance is concerned than were those in resident families, and as a whole, their retardation was greater—47 per cent as compared with 35 per cent. Those children in migratory families who had attended city schools were less retarded than those who had attended rural schools, the percentage of retardation falling to 41, a much smaller proportion than that found among the children of resident laborers; but even these children who may perhaps have enjoyed the advantages of large, well-organized school systems were considerably more retarded than the children of farm

owners attending rural schools in the beet-growing districts, whose school attendance was relatively good in comparison with that of migratory workers' children.

TABLE XLIX.—*Retardation, by type of school attended; children between 8 and 16 years of age in migratory families: Michigan group.*

Type of school attended.	Children between 8 and 16 in migratory families.						
	Total.	Retarded.		Normal.		Advanced.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	271	126	46.5	130	48.0	15	5.5
City.....	209	86	41.1	109	52.2	14	6.7
Rural.....	54	35	64.8	13	33.3	1	1.9
Not reported.....	8	5		3			

¹ Not shown where base is less than 50.

How much greater than the average is the retardation among the children of migratory laborers is indicated by the fact that at average rates⁶⁴ for city school children only 52, or 25 per cent, of the 209 children in transient families attending city schools would have been over age for their grades, whereas actually 86, or 41 per cent, were retarded. The cumulative ill effect of frequent moving from place to place on the schooling of the children is shown also in the fact that whereas the average rate of retardation for children in city schools increases from 11 per cent among 8-year-old children to 37 per cent among those 15 years of age, the rate among the children of transient families included in the present study rose from 10 per cent among 8- and 9-year-old children to 70 per cent among children aged from 12 to 15 years of age.

TABLE L.—*Retardation, by age of child; children between 8 and 16 years of age in migratory families, attending city schools: Michigan group.*

Age of child.	Children between 8 and 16 in migratory families, attending city schools.				
	Total.	Retarded.		Retarded according to average rate. ^a	
		Number.	Per cent.	Number.	Per cent.
Total.....	209	86	41.1	52.3	25.0
8 years, under 9.....	34	1	2.9	3.6	10.5
9 years, under 10.....	28	5	17.9	4.3	15.5
10 years, under 11.....	37	17	45.9	8.0	21.6
11 years, under 12.....	29	6	20.7	7.8	26.9
12 years, under 13.....	30	15	50.0	9.7	32.4
13 years, under 14.....	23	19	82.6	8.4	36.5
14 years, under 15.....	14	10	71.4	5.3	37.8
15 years, under 16.....	14	13	92.9	5.2	37.3

^a Based on proportions from a distribution of 1,142,179 children in 80 cities, 1917-18. Unpublished figures furnished by the U. S. Bureau of Education.

⁶⁴ See p. 45, note 32.

Supplementary study of school attendance and retardation.

The question may be raised as to whether these conditions of retardation and attendance are not found also among the school children of the districts studied who did not work in the beet fields. An effort was made to secure information on this point. One of the county superintendents, thoroughly appreciative of the imperfect functioning of the school system in the case of the children who worked on the beet crop, had prepared and sent out in 1919 a questionnaire covering attendance and absence for beet-field and other agricultural work. This questionnaire, slightly changed and adapted to the Children's Bureau study, was sent to the majority of schools in the beet-growing districts visited, with the request that the teacher fill in the information requested for every child who had been enrolled in the school from the opening of school up to November 15.⁶⁵ It developed later that, as in Colorado, many children stayed out of school entirely until the beet harvest was over, often making the date of entering school late November or early December. Figures based on these records are therefore conservative; and were all children in these schools who worked in the beet fields included, the proportion of workers would be larger, the attendance poorer, and the retardation probably greater.

The questionnaires were filled out by 54 schools, all in beet-growing districts, in the 3 counties of Gratiot, Saginaw, and Isabella. Complete or nearly complete records were given for 1,809 of the 1,892⁶⁶ children who had enrolled up to November 15. The records of 358, or 20 per cent, of these children showed unexcused absence for work in the beet fields exclusive of "beet vacations." These children for the purposes of the study, have been classed as beet-field workers. All others have been regarded as not being workers, for while there were doubtless some children who worked in the beet fields on Saturdays or before and after school, even though they did not stay out of school for the work, the only definite division that could be made between workers and nonworkers was on the basis of actual nonattendance for work on the beet crop.

⁶⁵ The information requested included: (1) the child's name; (2) sex; (3) present age; (4) present grade; (5) date child entered school this fall (1920); (6) number of days attended, number of days absent, to Nov. 15, 1920; (7) number of days absent because of beet-field work; (8) dates excused by county superintendent or commissioner; (9) cause of absence not due to beet-field work; (10) date of leaving district; (11) resident or migratory family; (12) if migratory, where from; (13) father's name; (14) present address; (15) father's occupation; (16) nationality.

⁶⁶ The 83 cases in which teachers gave incomplete or indefinite records have been omitted from the tables.

TABLE LI.—Comparison of school attendance of children working in beet fields with that of children not working in beet fields during the autumn of 1920 (up to November 15), by county; pupils in schools in Gratiot, Isabella, and Saginaw Counties, Mich.¹

County.	Total number reporting days present and days absent.	School attendance.								
		Children working in beet fields.								
		Total possible days of attendance.	Number reporting.	Possible days.	Days present.		Days absent.		Days absent for beet work.	
					Number.	Per cent.	Number.	Per cent.	Number.	Per cent of total absence.
Gratiot.....	771	35,662.5	181	8,322.5	5,147.0	61.8	3,175.5	38.2	2,768.5	87.2
Isabella.....	212	10,546.0	31	1,548.0	1,091.0	70.5	457.0	29.5	396.0	86.7
Saginaw.....	703	3,276.0	146	6,616.5	3,497.5	52.9	3,119.0	47.1	2,687.5	86.2

County.	School attendance.					
	Children not working in beet fields.					
	Number reporting.	Possible days attendance.	Days present.		Days absent.	
			Number.	Per cent.	Number.	Per cent.
Gratiot.....	590	27,370.0	25,150.5	91.9	2,219.5	8.1
Isabella.....	181	8,998.0	8,011.0	89.0	987.0	11.0
Saginaw.....	557	26,143.5	22,398.0	85.7	3,745.5	14.3

¹ Includes only the pupils for whom school attendance records were secured.

In Gratiot County school records up to November 15 were secured for 819 children.⁶⁷ Of these, 213, or 26 per cent, were reported as working in the beet fields. In spite of the fact that three-fourths of these 213 children were residents of the districts where they went to school, they had been in school on an average only 28 out of the 46 school days up to November 15; that is, they had failed to receive 38 per cent of the instruction provided. Almost all the absence was definitely stated to be for work on the beet crop, 87 per cent being so recorded by the teachers. The children who did not work in the beet fields, on the other hand, averaged 43 days in school out of the 46. They had a percentage of attendance of 92, as compared with the 62 of the beet-field workers. One hundred and seventy-seven of the children attended schools which closed for a "beet vacation" of 1 or 2 weeks, but 69, or 39 per cent, of even these children had had unexcused absences during the beet harvest, in addition to the "beet

⁶⁷ This is exclusive of 49 whose records were incomplete, the total enrolled to November 15 being 868.

vacation." Except for children of farmers, who help harvest beets only on their home farms, the "beet vacation" usually did not cover the number of days which the children were called upon to work.

In Saginaw County conditions were similar. Of 740⁶⁸ children, 172, or 23 per cent, worked during the beet harvest. The workers had been absent approximately 22 days out of 47, the average number of days school sessions had been held prior to November 15, while the nonworkers had been absent but 7 days. Considerably over four-fifths of the absences among the workers had been for the purpose of harvesting beets. Only 1 school reported a "beet vacation." That vacation affected one room only and lasted only 1 week. Thirty-seven of the 50 children in that room had additional absences on account of their work on the beet crop.

In Isabella County⁶⁹ the beet industry is of more recent development, and the proportion of workers among the school children was decidedly smaller. Only 32 out of 250 children⁷⁰ registered as in school up to November 15 were classed by the teachers as beet-field workers. These children were largely from migratory families. Nevertheless their attendance was better than that shown by the beet-field workers in the other counties, though considerably less satisfactory than that of children who did not work on the beet crop. Thus, they had attended 70 per cent of the school days up to November 15, whereas children who did not work in the beet fields had been present 89 per cent of the possible days. Beet-field work caused 87 per cent of the absence of the working children, who out of a possible 50 school days had averaged but 35. No "beet vacations" were reported.

A large proportion of all the children in these schools, for whom records were secured, had failed to reach the grades regarded as normal for their ages, but at every age⁷¹ a larger proportion of the working than of the nonworking children were retarded. Thus, among the 9-year-old children one-fifth of the nonworkers, but over one-half of the workers, were retarded; at 12 years of age only three-tenths of the children who had not worked were over age for their grade, as compared with three-fifths of those who were kept out of school for the purpose of working in the beet fields.

⁶⁸ This is exclusive of 27 enrolled previous to November 15 whose records were incomplete.

⁶⁹ As only eight schools in Isabella County made satisfactory returns in reply to the questionnaires sent out, this county is not as well covered, nor are the records as representative, as those for Gratiot and Saginaw Counties. Some of the schools in the largest beet-growing centers failed to answer the questionnaires.

⁷⁰ This is exclusive of seven whose records were incomplete.

⁷¹ See p. 50, note 38.

TABLE LII.—Comparison of retardation of children working in beet fields with that of children not working in beet fields, by county; children between 8 and 16 years of age in schools in Gratiot, Isabella, and Saginaw Counties, Michigan.

Employment of child, and county.	Children between 8 and 16 years of age.										
	Total.	Retarded.						Normal.		Advanced.	
		Total.		1 year.		2 years and over.		Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹
		Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹	Num-ber.	Per-cent. ¹				
Total.....	1,306	512	39.2	315	24.1	197	15.1	673	51.5	115	8.8
Worked in beet fields.....	² 341	211	61.9	119	34.9	92	27.0	119	34.9	10	2.9
Did not work in beet fields.....	³ 965	301	31.2	196	20.3	105	10.9	554	57.4	105	10.9
Gratiot.....	593	227	38.3	130	21.9	97	16.4	296	49.9	64	10.8
Worked in beet fields.....	² 169	112	66.3	61	36.1	51	30.2	51	20.2	5	3.0
Did not work in beet fields.....	⁴ 424	115	27.1	69	16.3	46	10.8	245	57.8	59	13.9
Isabella.....	166	62	37.3	45	27.1	17	10.2	88	53.0	16	9.6
Worked in beet fields.....	30	20	.....	15	.....	5	.....	9	.....	1	.....
Did not work in beet fields.....	136	42	30.9	30	22.1	12	8.8	79	58.1	15	11.0
Saginaw.....	547	223	40.8	140	25.6	83	15.2	289	52.8	35	6.4
Worked in beet fields.....	142	79	55.6	43	30.3	36	25.4	59	41.5	4	2.8
Did not work in beet fields.....	405	144	35.6	97	24.0	47	11.6	230	56.8	31	7.7

¹ Not shown where base is less than 50.
² Includes 1 child for whom grade was not reported.
³ Includes 5 children for whom grade was not reported.

TABLE LIII.—Comparison of retardation of children working in beet fields with that of children not working in beet fields, by age of child; children between 8 and 16 years of age in schools in Gratiot, Isabella, and Saginaw Counties, Michigan.

Age of child.	Children between 8 and 16 years of age—								
	Total.	Not working in beet fields.							
		Retarded.		Normal.		Advanced.			
		Number.	Per-cent. ¹	Number.	Per-cent. ¹	Number.	Per-cent. ¹	Number.	Per-cent. ¹
Total.....	1,306	² 965	301	31.2	554	57.4	105	10.9	
8 years, under 9.....	200	³ 162	31	19.1	104	64.2	24	14.8	
9 years, under 10.....	202	162	35	21.6	112	69.1	15	9.3	
10 years, under 11.....	203	⁴ 146	36	24.7	91	62.3	18	12.3	
11 years, under 12.....	170	¹ 127	42	33.1	65	51.2	19	15.0	
12 years, under 13.....	187	137	40	29.2	72	52.6	25	18.2	
13 years, under 14.....	173	121	47	38.8	71	58.7	3	2.5	
14 years, under 15.....	106	67	30	44.8	36	53.7	1	1.5	
15 years, under 16.....	65	43	40	.....	3	.....	.....	.....

¹ Not shown where base is less than 50.
² Includes 5 children for whom grade was not reported.
³ Includes 3 children for whom grade was not reported.
⁴ Includes 1 child for whom grade was not reported.

TABLE LIII.—*Comparison of retardation of children, etc.—Continued.*

Age of child.	Children between 8 and 16 years of age—						
	Working in beet fields.						
	Total.	Retarded.		Normal.		Advanced.	
		Number.	Per cent. ¹	Number.	Per cent. ¹	Number.	Per cent. ¹
Total.....	341	211	61.9	119	34.9	10	2.9
8 years, under 9.....	38	21	.....	17	.....	.....	.....
9 years, under 10.....	40	21	.....	17	.....	1	.....
10 years, under 11.....	57	27	47.4	29	50.9	1	1.8
11 years, under 12.....	43	22	.....	18	.....	3	.....
12 years, under 13.....	50	31	62.0	15	30.0	4	8.0
13 years, under 14.....	52	40	76.9	11	21.2	1	1.9
14 years, under 15.....	39	28	.....	11	.....	.....	.....
15 years, under 16.....	22	21	.....	1	.....	.....	.....

¹ Not shown where base is less than 50.

² Includes 5 children for whom grade was not reported.

³ Includes 3 children for whom grade was not reported.

⁴ Includes 1 child for whom grade was not reported.

The proportion of children of foreign parentage, it is true, is much larger among the beet-field workers than among those not working in the beet fields. The teachers in the schools furnishing records reported that only 17 per cent of the working children, as compared with 63 per cent of the nonworkers, were Americans or English-speaking. To what extent this circumstance accounts for the less satisfactory school progress of the beet-field workers it is impossible to determine from the data available. Lack of familiarity with the language, and possibly an unstimulating home environment, may account for part of the difference in the school standing of those who work in the beet fields and those who do not. But the strikingly poorer school attendance of the former, due almost entirely to their work on the beet crop, is probably the most important factor in their failure to make normal grades, or even to make as satisfactory progress as the children who do not work.

The following are a few characteristic comments on the effect of absence for the beet harvest made by teachers in the schools for which attendance records were secured.

You ask for my opinion as to the effects of these absences upon the child's progress, and I can only say that it is a very great hindrance. * * * Not only the child himself but the whole class, is kept back in their work and the whole school year spoiled.

I have found during my teaching experience that even short absences retard a child's progress.

In regard to your inquiry concerning the effect upon the child's school progress of absence due to beet work, I would say that my experience has taught me that such circumstances make a child's "average" school progress impossible.

I think the progress of children in school is greatly retarded by * * * absences due to beet work.

I think the greatest effect upon the child's school progress of absences due to beet work and other work is the loss of the school work and the loss of their interest in school work.

I notice that the children who stay out of school are unable to keep up with their class. The Russian children were very bright when they had a chance, but when they were kept out so much it made it very hard for them.

It is my opinion that absence for beet work does retard the pupils in their school work and makes it very difficult for them to "catch up" in their work when they remain out during the harvest season.

There is, of course, a bad effect upon the children's progress when they are absent. We can not keep the others back for them, and so they must do extra work or else lose out entirely on what they missed.

It seems next to impossible for a child after being absent four or six weeks at the beginning of the year to be able to take up his work with his regular class. I also find they are not fitted for school work when they do return, as they are too tired and listless. Many of them work beyond their strength and it takes them so long to adjust themselves to school routine.

WORK OF MOTHERS IN THE BEET FIELDS.

In all except a few of the beet-field laborers' families visited the mother as well as the children worked on the crop. Not counting families included in the study only because the mother worked⁷² and thus correcting the bias given by the method of selecting families, only 108 of the 357 mothers in families in which one or more children worked had not helped with the handwork on the beets, and more than half of them were the wives of farm owners. Only one-half of the mothers whose husbands owned their farms had shared in the beet-field work, but three-fourths of the tenants' and four-fifths of the beet-field laborers' wives had done so. The majority of the farm owners' wives were of American stock whose traditions were usually opposed to field work for women, a prejudice which was not present in families of foreign birth. Four-fifths of the foreign-born mothers worked as compared with only one-half of those of native birth. Even among the foreign families, however, with the possible exception of the Poles, beet-field work was not quite so generally done by these women as by the Russian-German women of Colorado.

The mothers in the Michigan families studied were not such experienced workers as those in Colorado, the average number of seasons at the work being only three as compared with eight for the mothers in the Colorado families. Even the wives of farm owners and tenant farmers, whose average number of seasons was more than

⁷²That is, families in which no child worked. See p. 54.

twice that of the laborers' wives, had averaged only five years in the beet-field work, whereas the farmers' wives in the Colorado study had averaged nine seasons. On the other hand, almost one-fifth of the wives of beet farmers had been cultivating beets for 10 seasons or longer.

Field work throughout pregnancy is not uncommon with these women, even when they are not feeling well, some reporting that they worked "in the beets" up to within a few hours of the birth of a baby. They do not in some cases have adequate rest after confinement, especially if it occurs during the beet season. One mother was out thinning and blocking two weeks after her confinement; another began to pull and top one week after her baby was born.

Many women declared "beet work is no work for a woman," and told of their difficulties in trying to help in the fields and perform the most necessary household tasks even when adequate care for the children was not considered. The following are typical comments on this situation made by mothers, all of whom had young children:

I have to work in the field from 4 o'clock in the morning until 7 at night, and then come home and cook and bake until 12 and 1 o'clock.

At first I tried to cook—worked in the field from half past 5 in the morning until 7 at night, and then came home and was often making bread and cake at 1 and 2 in the morning. But it was too much and toward the end of our hoeing there were days when we practically lived on milk.

In order to get my work done before going to the field I often have to get up at 3 o'clock. I bathe the children and prepare the food before going out. Then at night I must bake and clean house, so that there are many nights when I do not get more than 3 hours' sleep. The work is too hard for any woman. By the time you have worked 12 or 13 hours a day bending over you don't feel much like doing your cooking and housework.

It is hard to leave your children all day and work in the beet fields. On Sunday my husband and I have to clean house, bake, wash clothes, and take care of the garden, and we're all tired out Monday morning and have to start all over again.

I have little time for housework during the week in the beet season, and must do it all Saturday night and Sunday. I generally work almost all night Saturday washing and cleaning house, and on Sunday I iron and bake. I get very little sleep those two nights.

Hours of labor and duration of season.

The 397 working mothers did full days' work. In the laborers' families the most common hour of beginning during the blocking and thinning was 6 a. m., though nearly as many began at 7 or at 5 and a few at 4 a. m. Any mother who began later than 7 o'clock delayed her field work to finish housework. Six p. m. more often than any other hour marked the end of the working day, but 7 and even 8 were reported by nearly as many workers. The time taken for dinner was usually 1 hour, but often only half an hour. Some

women left their work early to prepare dinner for the family. In rare cases this took 2 hours, but usually less. The largest group of women worked between 10 and 11 hours a day. Only 32 of the 253 working mothers in laborers' families worked less than 9 hours a day and 89, or more than one-third, worked 12 hours or more. The blocking and thinning usually lasted from 4 to 6 weeks. The largest group of laborers' wives had worked at this process at least 6 weeks. Only 11 said they had worked less than 2 weeks, 64 reported 4 weeks, 35 had worked 5 weeks, and 71 reported 6 weeks or more.

TABLE LIV.—Daily hours blocking and thinning, by economic status of family; mothers working in beet fields: Michigan group.

Daily hours blocking and thinning.	Mothers working in beet fields.							
	Total.		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Total.....	397		253		60		84	
Did not work blocking and thinning.....	4		2				2	
Worked blocking and thinning.....	393	100.0	251	100.0	60	100.0	82	100.0
Less than 4 hours.....	7	1.8	2	.8			5	6.1
4 hours, less than 5.....	5	1.3	2	.8	1	1.7	2	2.4
5 hours, less than 6.....	12	3.1	1	.4	3	5.0	8	9.8
6 hours, less than 7.....	17	4.3	2	.8	4	6.7	11	13.4
7 hours, less than 8.....	27	6.9	9	3.6	8	13.3	10	12.2
8 hours, less than 9.....	36	9.2	16	6.4	10	16.7	10	12.2
9 hours, less than 10.....	35	8.9	18	7.2	7	11.7	10	12.2
10 hours, less than 11.....	68	17.3	49	19.5	7	11.7	12	14.6
11 hours, less than 12.....	58	14.8	55	21.9	3	5.0		
12 hours, less than 13.....	53	13.5	41	16.3	10	16.7	2	2.4
13 hours, less than 14.....	29	7.4	28	11.2			1	1.2
14 hours and over.....	21	5.3	20	8.0	1	1.7		
Not reported and irregular.....	25	6.4	8	3.2	6	10.0	11	13.4

As many of the beet farms in the Michigan areas studied were small, a few farmers, chiefly foreign born, who had worked on contract before renting or owning their land, took a beet contract after their own work was completed. The result of this arrangement was that their wives worked as hard as the laborers' wives. Taking contracts in addition to their own work was reported by 21 families, 11 of whom owned their own farms. In 16 of these families the mother worked on both the contract and the home acreage. As a rule, however, both the wives of tenants and owners had comparatively light work and were not obliged to work so many hours a day nor to give so many weeks to the field work as the women whose husbands had contracts. The hour of beginning during the spring process was usually 7 or 8 o'clock and work commonly ended by 5 or 6. Many of the farm owners' wives reported that they took 2 hours for dinner. Although about one-fifth of the mothers in tenant farmers' families and 3 of the farm owners' wives worked 12 hours

or more daily, and about half of the former and three-tenths of the latter reported a working day of 9 hours or more, the majority worked shorter hours than were customary for women working on their husbands' beet contracts.

Almost half the tenants' wives and three-fifths of the wives of farm owners had worked less than 3 weeks at blocking and thinning and only 7 of the former and 2 of the latter reported 6 weeks or over on the spring work.

Hoing took from 2 to 3 weeks for most of the women in laborers' and tenants' families; the wives of farm owners spent even less time at the work, the majority reporting less than 2 weeks. A working day of from 10 to 12 hours was most commonly reported by all classes.

The fall work had not begun at the time the study was made.

TABLE I.V.—Daily hours hoing, by economic status of family; mothers working in beet fields: Michigan group.

Daily hours hoing.	Mothers working in beet fields.							
	Total.		Economic status of family.					
			Laborer.		Tenant farmer.		Farm owner.	
	Num-ber.	Per cent distribu-tion.	Num-ber.	Per cent distribu-tion.	Num-ber.	Per cent distribu-tion.	Num-ber.	Per cent distribu-tion.
Total.....	397		253		60		84	
Did not work hoing.....	35		14		10		11	
Worked at hoing.....	362	100.0	239	100.0	50	100.0	73	100.0
Less than 4 hours.....	6	1.7	1	.4	1	2.0	4	5.5
4 hours, less than 5.....	7	1.9	3	1.3	2	4.0	2	2.7
5 hours, less than 6.....	8	2.2					6	8.2
6 hours, less than 7.....	19	5.2	2	.8	6	12.0	11	15.1
7 hours, less than 8.....	25	6.9	10	4.2	6	12.0	9	12.3
8 hours, less than 9.....	37	10.2	22	9.2	6	12.0	9	12.3
9 hours, less than 10.....	41	11.3	24	10.0	7	14.0	10	13.7
10 hours, less than 11.....	68	18.8	51	21.3	6	12.0	11	15.1
11 hours, less than 12.....	54	14.9	50	20.9	3	6.0	1	1.4
12 hours, less than 13.....	37	10.2	32	13.4	5	10.0		
13 hours, less than 14.....	20	5.5	20	8.4				
14 hours and over.....	15	4.1	15	6.3				
Not reported and irregular.....	25	6.9	9	3.8	6	12.0	10	13.7

Care of young children.

Many of the working mothers had young children. Some had 2 children less than 3 years of age, and 1 mother had 3. Of the 679 children under 6 years of age included in the study, 423 were in contract laborers' families, where mothers had little opportunity, because of their work in the fields, to give much attention to their babies. The mothers of 9 out of 10 of the laborers' children and of 6 out of 10 of the farm owners' children under 6 years of age were beet-field workers. The latter, inasmuch as their work was on their own farms, had a much better opportunity to look after

their children than did the laborers' wives. Many of the laborers lived at some distance from their work, and unless some one could be left with the children they had to be taken to the field by their parents and kept there throughout the working hours. Practically one-half of the children under 6 years of age (331) were usually and 267 were invariably taken to the fields. Of these children, 152 were under 3 years of age and 43 were not 1 year old. The babies were sometimes left in baskets or boxes under a tree, though many fields were without any shade. A small canvas tent was sometimes put up for them, and was a common sight in the beet fields. Few children were protected by netting from flies and mosquitoes. In one family 2 children, neither one of them old enough to walk, were laid on a blanket under a tree near the beet field. The parents began their work before breakfast, bringing both breakfast and dinner with them. The mother brought milk for the children, which she said usually soured in warm weather. She remarked that the hot days were very hard on the children. Both looked pale and sickly. One baby, less than 1 month old, was seen lying on the ground about 50 feet from where his parents were working. They explained that there was no room in the truck which brought them to the field to carry a basket for the baby. The older children—that is, those 3, 4, and 5 years of age—played about the beet fields or adjoining farms. The mother usually kept an eye on them, though frequently children somewhat older were supposed to look after the little ones. One 6-year-old child, on being asked by the agent what she did all day in the field, said, "I sit in the sun and wish to myself that I could die." Her mother said that there was no shade near the field and that it was very hot.

Of the 343 children who were left at home, 179, or only about one-half, were cared for by their mothers or other adults. Fifteen had no caretaker in the house, but the houses in which they lived were usually near the beet fields, so that their mothers could look in on them occasionally. Three of these children were under 3, and 12 were from 3 to 5 years of age. One was a 9-months-old baby. He was left alone in the house, which was completely shut up, while the mother worked from 5 a. m., with only 1 hour at home in the middle of the day, until 7.30 p. m. Twenty-eight others were left at home under the care of a child less than 7 years of age, and 121 more were left in charge of child caretakers 7 years of age or older.

FAMILY EARNINGS.

Rate of pay and earnings from beet contracts.

Practically no laborers in the Michigan beet districts studied were engaged by the beet grower. As many of the beet plantings are

small, a family does not, ordinarily, find enough work for the season on one farm, and the factory undertakes to find for the laborer as large an acreage as he can take care of. To this end all the farmers report their needs in the way of labor to the company field agent of their district and he undertakes to provide labor for, and assign labor to, each farmer—in other words, to see that the handwork is done. If, as sometimes happens, laborers leave after they have been brought in and established in a given locality, supposedly for the season, the field boss is obliged to bring in others to do the work, and if he has to hire day workers at a cost greater than that of the contract labor, the company, not the farmer, pays the difference and sustains the loss.

Seventy per cent of the laborers reported that they were engaged by company agents. In essential details the companies did not differ from one another in their arrangements with laborers. Upon engagement the laborer entered into a contract with the company whereby he agreed to do the handwork on a given number of acres at a specified rate per acre for each process. The company agreed to provide in addition transportation to the beet fields and living accommodations. In the season of 1920 the rate paid was \$28 an acre when the rows were 22 to 24 inches apart and \$26 with rows 26 to 28 inches apart. This amount was paid by the farmer, and in addition a bonus of \$7 an acre was paid by the company if the laborer worked according to agreement. Payment was made in three installments. The employer always held back a part of the pay due, even when payment was long deferred, in order to hold the laborer throughout the season. The laborer was not paid for blocking and thinning, for example, until the hoeing was partly done; and part of the money for hoeing was likewise held back until the harvesting was completed. As in Colorado, the contract tended to become merely an understanding rather than a written document; only one-fourth of the laborers reported that they had signed a written agreement. One laborer said that he would not sign a contract, because if he did so the company would send him into poor fields, whereas without a contract he was in a position to choose where he would work.

Between two-fifths and one-half of the 250 laborers' families that reported the amount their work would bring them expected to earn less than \$800 for their 6 or 7 months in the beet fields, providing they performed all the processes on the same acreage on which they had worked up to the time of the interview. Most of them would earn from \$500 to \$800, including 66 families with but 2 workers—usually 2 adults, but in some cases 1 adult and 1 child. In the group expecting to earn \$800 to \$999 were 52 families, approximately one-half of them having 4 or more workers. Thirty-two larger families

expected to earn from \$1,000 to \$1,199. Forty-seven families, averaging a little over 5 workers a family, expected to earn between \$1,200 and \$2,000, and the earnings of 7 families with an average of between 6 and 7 workers per family would amount to between \$2,000 and \$2,600.

According to the average acreage cared for per child as based on reports of the families visited⁷³ the child who worked in all the processes earned on an average, including the bonus, from \$114 to \$122, according to the distance between the rows. Although some families declared that the work was profitable "because the children can help," others seemed to realize the disadvantages of an income earned by the whole family. One father remarked, "I can make as much in two weeks in the factory as all four children and I make together in a month in the beets," and another who was a street cleaner in Bay City said, "The whole family work and work hard and we are no better off here than we were in the city," where only the father worked.

TABLE LVI.—Amount payable for work in beet fields, by number of persons working; families¹ working in beet fields: Michigan group.

Amount payable for work in beet fields.	Families ¹ working in beet fields.											
	Total.		Number of persons working. ²									
	Num-ber.	Per cent distri-bu-tion.	1		2		3	4	5	6	7	8-10
			Num-ber.	Per cent distri-bu-tion.	Num-ber.	Per cent distri-bu-tion.						
Total.....	250	100.0	1	91	100.0	44	49	31	17	9	8	
Less than \$400.....	22	8.8	1	14	15.4	5	1	1	.....	.....	.....
\$400-\$599.....	40	16.0	.....	23	25.3	11	2	2	.....	2	.....
\$600-\$799.....	50	20.0	.....	29	31.9	7	9	3	.....	1	1
\$800-\$999.....	52	20.8	.....	18	19.8	9	20	3	.....	1	1
\$1,000-\$1,199.....	32	12.8	.....	5	5.5	6	10	9	.....	1	.....
\$1,200-\$1,399.....	20	8.0	.....	2	2.2	1	3	3	.....	6	3
\$1,400-\$1,599.....	14	5.6	.....	.....	.....	4	.....	5	.....	4	.....
\$1,600-\$1,799.....	5	2.0	.....	.....	.....	.....	.....	4	.....	.....	1
\$1,800-\$1,999.....	8	3.2	.....	.....	.....	1	2	1	.....	1	2
\$2,000-\$2,550.....	7	2.8	.....	.....	.....	.....	2	.....	.....	2	2

¹ Excludes tenant and farm-owning families.
² Per cent distribution not shown where base is less than 50.
³ Excludes 39 families that did not report amount payable.

The cash income of beet-field laborers—nonresident as well as resident—is often supplemented by produce from a garden, and by the keeping of a cow and chickens,⁷⁴ all factors tending to reduce the

⁷³ See p. 95.
⁷⁴ Eighty-eight per cent of the laborers reported a garden, usually one-fourth of an acre or less; 60 per cent kept a few chickens, usually less than 10; 41 per cent kept cows, 6 families reporting more than 1.

cost of living. On the other hand, the method of deferring payment until certain processes were completed probably made it difficult for some families who were obliged to buy on credit to purchase advantageously. Practically two-thirds of the total number of families, 190, reported that they made their purchases entirely on credit. For about one-half of the laborers' families credit was established by the sugar companies; that is, the company vouched for their accounts up to a stated amount. This they did usually by paying the store bills, deducting the amount from the laborers' pay. It was customary, as has already been pointed out, for the company to pay the laborers by taking the farmer's note for an equal sum. Many of the workers expressed dissatisfaction with the arrangements, saying that they were overcharged by the stores, that they did not know where they stood financially, and that they bought more than they should when they made a practice of buying on credit.

The beet-field laborers in the Michigan areas included in this study lacked on the whole the prosperity of the Russian-German resident laborers of Colorado. Nevertheless, the most ambitious and thrifty, as in Colorado, save money and become renters and eventually owners of farms.

Father's earnings in other work.

The proportion of fathers having winter occupations was much larger among the Michigan than among the Colorado laborers. This was due, no doubt, to the fact that many industrial centers were near at hand, where up to 1920 the demand for labor had been so great that almost any man could find work. Moreover, the majority of the laborers were migratory, expecting as a matter of course to return to city jobs when the beet-field work was completed. Of the 282 fathers who were contract laborers, only 19 were reported as doing no work during the previous winter. This represents only about 7 per cent of the beet-field laborers, whereas, in Colorado almost one-fourth of those who might have worked had had no occupation during the previous winter.

Over one-half of the 263 fathers in the Michigan beet-growing areas who had worked during the winter of 1919-20, had worked in factories, about one-third of them in metal-manufacturing plants, chiefly in Detroit. A small proportion, about one-eighth, had worked on farms, a few in mines and on railroads, and the rest in a variety of occupations. Of the total number of fathers, both resident and migratory laborers, who had worked during the winter preceding the inquiry and who reported the amount earned, 47, or slightly over one-fifth had made less than \$300 from their winter employment, but over three-fifths had made \$400 or more, and approximately 40 per cent had earned at least \$600.

TABLE LVII.—Father's winter¹ occupation, by amount of earnings; fathers² who were employed in winter: Michigan group.

Father's winter occupation. ¹	Fathers ² employed in winter.												
	Total.		Amount of earnings. ³										
	Num-ber.	Per cent dis-tribu-tion.	Less than \$50.	\$50-\$99.	\$100-\$149.	\$150-\$199.	\$200-\$299.	\$300-\$399.	\$400-\$499.	\$500-\$599.	\$600-\$799.	\$800 and over.	Not re-ported.
Total.....	263	100.0	2	13	6	7	17	31	22	27	43	38	55
Farm.....	34	12.9	2	4	.....	.....	1	2	1	3	1	.....	20
Farmer.....	6	2.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Laborer.....	28	10.6	2	4	.....	.....	1	2	1	3	1	.....	14
Factory employe.....	136	51.7	.....	8	4	3	10	17	11	12	29	26	16
Sugar.....	18	6.8	.....	1	2	.....	5	5	.....	.....	2	.....	3
Metal.....	91	34.6	.....	7	1	2	2	8	5	10	25	22	9
Other.....	27	10.3	.....	1	1	1	3	4	6	2	2	4	4
Skilled trades.....	25	9.5	.....	2	.....	3	1	3	2	1	4	7	2
Railroad laborer.....	8	3.0	.....	.....	.....	.....	.....	5	.....	2	.....	1	.....
Domestic and per-sonal service.....	8	3.0	.....	.....	2	.....	.....	.....	1	1	3	1	.....
Mining.....	14	5.3	.....	.....	.....	1	3	1	1	.....	1	2	5
All other occupations.....	37	14.1	.....	1	.....	.....	2	3	5	8	5	1	12
Not reported.....	1	.4	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....

¹ From Dec. 1 to beginning of work in beet fields.

² Excludes fathers in tenant and farm-owning families.

³ Farm laborers in addition to cash earnings usually received one or more meals and in some cases lodging.

HOUSING AND SANITATION.

Houses.

In the Michigan beet-raising area covered by the survey the beet acreages were usually so small that each family of laborers worked on three or four different farms during the season. As a result, living quarters were furnished not by the farmers, as in Colorado, but by the sugar companies, the farmers paying the company at the rate of 50 cents for each acre of beets cared for by laborers for whom the company had provided shelter. Of the 289 laborers' families visited, only 4 were living in houses furnished by farmers. Nine others owned or rented their houses. All the remaining families occupied houses belonging to the sugar companies.

While it was to the advantage of everyone to have the farms on which a family worked close together, it frequently happened that the various working places were some distance apart. To meet such conditions the sugar companies usually provided small portable houses, easily moved from place to place, so that the family could be established at the location most convenient to their work. The portable houses were 1-, 2-, or 3-room structures, usually sheathed and shingled, set up on wooden props, and having 2 or 3 small windows and 1 door. They were purposely kept as small as pos-

sible, 16 feet by 24 feet, so that they could be moved easily. When not overcrowded and when clean and weatherproof, they were suitable enough camping places for the summer, but all too frequently too many people were crowded in, and the houses were allowed to fall into disrepair. In 1 house, for example, which rested on 4 stones and looked as if it might fall to pieces, the floor had warped and settled and was full of cracks, which were stuffed with rags to keep out the cold. Several described their houses as "nothing but cardboard and paper," or "cardboard papered." The buildings were neither suitable nor intended for all-the-year dwelling places, though some families remained in them through the winter for lack of a better place. Occasionally a "shack" of tar paper or tin, or a caravan wagon to be moved about as the work required, was the only shelter provided. These wagons furnished such cramped quarters that, as one child told the agent, the family "has to take turns going in, as there isn't room for all of us at once." One wagon housed 2 families of Mexicans, 10 persons in all. A double-decked bed (about the size of an ordinary double bed), built of rough boards covered with a nailed-down mattress, had been provided, each family using 1 berth.

The companies also lodged the beet-field laborers' families to a considerable extent in unused farmhouses. For one reason or another a good many old farmhouses stood vacant, and where they were in decent repair they made the most desirable dwellings; often, however, they were even more dilapidated than the portable houses. Families frequently reported that they were unable to use the upper floor of such houses because the roof leaked badly. As one family expressed it, "in good weather we have three rooms, in bad two." In one house some of the windows were out and boards had been nailed over the frames. In another house in which the window glass was out the family had repaired the windows with glass taken out of their picture frames. One-fourth of the 276 company houses, including portable houses and farmhouses, were badly out of repair and did not furnish decent living quarters. Only two-fifths of them were in fair condition, while but little more than one-fourth were in good shape, that is, were tight against wind and weather, had doors and windows that were whole, and wood or plaster that was sound. Both the farmers and the sugar companies have for so long apparently acted on the principle that "anything is good enough to house the beet-field laborers," that the change to better conditions, though gradually coming, is slow. One of the sugar companies was remodeling some of its best houses for winter use, hoping thereby to make permanent settlement attractive to some of the better families of laborers. A number of families told agents of the bureau that if the



COMPANY HOUSES IN MICHIGAN.

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company would give them better houses to live in they would stay all winter.

The most intelligent and ambitious families will not take the worst old "beet shacks." One mother told of being taken to three or four houses before she found one that she considered suitable for her family—an unused farmhouse, with trees, a barn, space for a garden, and, just across the road, the district school. The family was well pleased and had decided to stay permanently. Eventually they would rent, and, in all probability, own a farm. But for one such family and house there were a dozen less enterprising families and less satisfactory houses. The majority of the migratory workers took the places offered them, and if they did not like them left, or tolerated them till the end of the season, when they returned to the city. Complaints of the failure of the company to provide such accommodations as had been promised by the company agent were frequent. "Beet work isn't like it stood in the newspaper," was a typical remark. "Newspaper said company give wood and coal and big wages and nice house. But it don't." In a few cases the families charged that no house had been given them. One family had been housed in a shed until they had threatened to leave. The father of another family stated that while waiting for a house his family of 5 had been forced to live for 2 weeks in 2 rooms containing 19 other people; during this time his baby had caught cold and had died.

About three-fifths of the families had brought all their own furnishings and another fifth everything except a stove, the company paying the freight to the beet-growing region but not the return freight charge in every case. The company provided the furnishings as well as the house for 25 families. The furniture and household equipment provided were usually insufficient and of the roughest sort—a stove, shelf or rough board table, 1 or 2 chairs or boxes, and a bed, often of boards with only a rough mattress and a few blankets, comprising the outfit. One father remarked, "You could buy all the furniture in the house for 25 cents." A Mexican family whose house was exceptionally clean and tidy had been provided with only 2 beds, 1 without any mattress, a rough board table, 3 tree stumps for chairs and a few dishes. In many cases not enough bedding was supplied to keep the family warm.

Overcrowding.

In addition to other discomforts and inconveniences the beet-field laborers suffer also from overcrowding. A generally accepted standard of comfort and decency requires, in addition to a kitchen and a living room, a bedroom for the parents and 1 for the children of each sex. A minimum, even for temporary quarters, would be 1 room in

addition to the necessary bedrooms. Many of the beet-field laborers were obliged to sleep with from 3 to 10 persons of both sexes in a small, ill-ventilated room, even when the combined kitchen and living room was also pressed into service as a bedroom. There were 112 laborers' families, two-fifths of the total number, with 2 persons or more per room and 39 families with 3 or more persons per room. Thirty-six families with from 3 to 9 members lived in houses containing only 2 rooms, and 10 families, consisting of from 3 to 10 persons, occupied 1-room dwellings.

Although the outdoor life possibly renders such conditions of crowding less intolerable and perhaps less injurious to health than they would be in a city, the moral danger for growing boys and girls involved in spending six months a year in quarters where practically no privacy is possible is no less great than if they lived in a crowded city tenement.

TABLE LVII.—Number of persons in household, by number of rooms in house; families¹ working in beet fields: Michigan group.

Number of persons in household.	Families ¹ occupying specified number of rooms.										
	Total.	1	2	3	4	5	6	7	8	12	Not reported.
Total.....	289	10	36	94	76	36	21	10	4	1	1
3.....	31	5	7	11	4	3	1				
4.....	36	1	7	17	9	2					
5.....	68	2	12	22	22	6	3	1			
6.....	41		4	15	11	6	3	1			1
7.....	42		4	17	7	6	4	3	1		
8.....	36		1	8	14	6	5	1		1	
9.....	11		1	1	3	2	2	1	1		
10.....	9	2			2	1	1	2	1		
11.....	8			1	2	3	2				
12.....	5				3	1					
13.....	2							1	1		

¹ Excludes tenant and farm-owning families.

Privies.

An outside privy was provided for the great majority of the families. Only 3 reported water-closets. In general only 1 family used each privy, but 30 families shared theirs with 1 other family and in 8 cases 3 families used the same privy. Two families had no toilet accommodations provided for them. Especially where privies are used, screens for doors and windows are an essential protection against contamination of food by flies, but screens were seldom found, and, if found at all, almost never included more than a screen door.

Water supply.

The majority (69 per cent) of the laborers' families reported the use of drilled wells. Fifty-seven, or about one-fifth of them, had

only a dug well, which was not always in good repair or free from surface pollution. Open wells were in some cases protected by a few loose boards, and tin cans, pieces of wood, and other rubbish had, in some instances, fallen into the water. Some families reported that the water was muddy or sandy; others that it had a bad odor or made them ill. Several complained that the company had refused or neglected to repair the well when its condition was reported. In one of these cases the water was secured by letting down a pail attached to the end of a rake. Eight families obtained their water from springs or brooks, and in 1 case from a ditch, all of which sources were likely to be dirty and polluted. Generally the water was within a few feet of the house, but 75 families reported that it was 50 yards or more distant. This means additional labor for the mother, who usually has to carry a large part of the water used, and makes it difficult to maintain high standards of personal or household cleanliness.



CONCLUSION.

Although the employment of children in agricultural occupations is beginning to be recognized as a problem worthy of serious consideration,⁷⁵ up to the present there has been little or no attempt at direct regulation of child labor on farms of any kind. Most State child labor laws, in fact, specifically exempt agricultural work from their provisions. While a few forbid the employment of children during school hours in "any gainful occupation" and fix maximum hours of labor for children in all occupations, the tendency has been to ignore the application of these laws to agricultural pursuits. Admittedly the application of such laws to children's work on farms involves difficulties of enforcement; and experience may show that a somewhat different type of legislation will be needed to extend the protection of the State to children doing agricultural work.

No automatic decrease in the number of children employed in the beet fields is likely to take place in the near future. Although children as beet-field laborers do not reduce the labor cost to the beet grower or to the sugar company, inasmuch as they do the work no better than adults and are paid on the same basis, they do increase the number of available "hands"; and the problem of securing and holding labor, particularly for some of the processes which the children do, has been a serious one in sugar-beet growing in the United States. Progress is being made in the development of machines for pulling and topping,⁷⁶ but no machines for blocking and thinning, for which children have been generally accepted as a necessary part of the labor supply, have as yet been invented, so that even if child workers were replaced by machinery in the harvest they would still be in demand for the spring work. Single men, chiefly Mexicans, have of late years been going to the beet fields in large numbers; but although they may temporarily replace to some extent the family labor now so prevalent, Mexicans with families also are beginning to "go to the beets," and their wives and children, like those of the Russian-

⁷⁵ For example, among the draft conventions relating to agricultural labor adopted by the International Labour Conference at its third session, in Geneva, October, 1921, was the following: "Children under the age of 14 years may not be employed or work in any public or private agricultural undertaking, or in any branch thereof, save outside the hours fixed for school attendance. If they are employed outside the hours of school attendance, the employment shall not be such as to prejudice their attendance at school." (International Labour Office, Official Bulletin, Supplement to Vol. IV, No. 23, Dec. 7, 1921, p. 5.) Up to July, 1922, no country had ratified this convention.

⁷⁶ *Saving Man Labor in Sugar-Beet Fields*, U. S. Department of Agriculture, Farmers' Bulletin 1042, p. 13. Washington, 1919.

German and Central-European beet-field laborers, are going to work in the beet fields.

Because of its interference with schooling, the long hours involved, and the uneducative character of the work—as monotonous and repetitive as many factory processes—labor in the beet fields is unsuitable for young children. Only one State, however, has attempted any specific regulation of child labor in the beet fields: Nebraska includes such work by name under the maximum-hours provision of its child labor law.

An indirect method of reducing to some extent the work of children on the beet farms is offered through the strict enforcement of school attendance laws. If, as the findings of the present study indicate, adequate school attendance laws were effectively enforced, at least one serious objection to beet-field work for children would be met. Satisfactory enforcement requires adequate administrative machinery—a sufficient number of full-time attendance officers, for example, and enforcement under State supervision.⁷⁷ It requires also cooperation on the part of the parents, and if the fullest cooperation is to be expected of the foreign-born beet-field laborer in rearing and educating his children he must himself be given opportunities to learn the language and be put in touch with the general community life. So long, also, as the theory of payment for the beet-field work is in effect that of a family wage it is not to be expected that the children will be kept in school regularly or the mother withdrawn from the field to care for her children and the home.

Special provision seems to be necessary if the children of migratory workers are to escape undue hardship. The responsibility for their education and welfare, falling between the community from which they come and that to which they go, is assumed by neither. An interesting experiment in attacking the admittedly difficult problem of schooling for migratory workers' children has been made recently in California through the passage of a law (June 3, 1921).⁷⁸ making it the duty of the State superintendent of public instruction to organize and maintain special classes for the education of children of migratory laborers in the rural districts of the State. Such an arrangement may or may not prove practicable in a given locality, but it is usually assumed that so far as it is found necessary or convenient to import families of laborers for seasonal work, it is the obligation of the community to which they go to provide school facilities for the children. If the community can not undertake it, the responsibility clearly devolves upon the State.

⁷⁷ Minimum Standards for Child Welfare, U. S. Children's Bureau, Publication No. 62, p. 6. Washington, 1920.

⁷⁸ California Laws of 1921, ch. 691.

1927
U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

U.S. CHILDREN'S BUREAU

GRACE ABBOTT, Chief

STANDARDS AND PROBLEMS
CONNECTED WITH THE ISSUANCE
OF
EMPLOYMENT CERTIFICATES

PROCEEDINGS OF CONFERENCE HELD UNDER THE AUSPICES
OF THE UNITED STATES CHILDREN'S BUREAU AND
THE NATIONAL EDUCATION ASSOCIATION
AT BOSTON, MASSACHUSETTS
JULY 5-6, 1922

Bureau Publication No. 116



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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, January 25, 1923.

SIR: There is transmitted herewith a report, *Standards and Problems Connected with the Issuance of Employment Certificates, Proceedings of Conference, Boston, July 5-6, 1922.* This conference, which was attended by State and local officials actually engaged either in issuing or in supervising the issuance of employment certificates, was held under the auspices of the Children's Bureau and the National Education Association.

A committee, appointed by the president of the National Education Association, and composed of the following educators—Mrs. Mary D. Bradford, Susan M. Dorsey, Thomas E. Johnson, Peter Mortenson, Sam Slawson, and S. E. Weber—cooperated with the Children's Bureau in making the arrangements for the conference.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

HON. JAMES J. DAVIS,
Secretary of Labor.

STANDARDS AND PROBLEMS CONNECTED WITH THE ISSUANCE OF EMPLOYMENT CERTIFICATES.

PROCEEDINGS OF CONFERENCE, BOSTON, JULY 5-6, 1922.

FIRST SESSION—JULY 5.

Chairman: MISS GRACE ABBOTT, *Chief of the United States Children's
Bureau.*

INTRODUCTORY STATEMENT.

MISS ABBOTT. We have called this conference at the request of a good many people who are interested in the improvement of our methods of certifying children for employment and in better cooperation between all agencies in the enforcement of our child labor laws.

Experience everywhere has demonstrated that the age, educational, and physical standards of a child labor law can be evenly and uniformly enforced only if no child is employed without a certificate and if no certificate is issued except upon reliable evidence that the child is legally qualified to work. With a good certifying system, inspection serves as little more than a reenforcement of respect for the certificate by both employer and child. If, however, certificates are issued on inadequate evidence or a careless canvass of the facts, official approval of the employment of children who are below the legal age is sure to be given by the issuing officer. This places a very heavy burden upon the inspection department, as under such circumstances the inspector must determine the ages of all the children employed, whether with or without certificates. Annual or semiannual inspection of factories will discover children illegally employed only after their school life has been interrupted and after they have, in consequence, already suffered much of the damage of premature employment.

In a few States the issuance of employment certificates is under State control, but in most States the authority to issue certificates is given to the local superintendent of schools. The careful at-

tention which this work requires is usually not given it by busy school or other local officers in the smaller centers, unless its value is clearly and frequently indicated by State officers. Supervision has been specifically provided for in the laws of only a few States. Authority to prepare forms or require reports is more frequent, but in many States such provisions in the law have not been utilized. While absolute uniformity in administration is not necessary and perhaps not desirable, it is essential that at least a certain minimum administrative standard should be followed throughout a State.

PART I.

THE LOCAL ISSUING OFFICE—ITS PROBLEMS AND FUNCTIONS.

THE PROCEDURE AND ORGANIZATION OF AN EMPLOYMENT-CERTIFICATE OFFICE.

ANNE S. DAVIS, *Director, Vocational Guidance Department, Chicago Public Schools.*

The department of vocational guidance of the Chicago Public Schools includes the employment-certificate division, which issues employment certificates to boys and girls between 14 and 16 when they leave school to work; the vocational guidance and placement division, which advises boys and girls in matters concerning further education and assists them in finding suitable positions; and the industrial studies division, which investigates industrial conditions and opportunities and studies the economic problems which young wage earners face.

The employment-certificate division, including the medical and statistical work, is the one which I am going to discuss in this paper.

In 1917, when the present child labor law of Illinois became effective, the issuing of employment certificates was transferred to the department of vocational guidance, where it logically belonged. Through a well-organized employment-certificate bureau it is possible to collect much valuable information which is necessary in giving vocational advice to children in the schools. It is through the employment-certificate office that the school is able to follow up children of employment-certificate age into industry; to supervise them to some extent after they have entered employment; to advise them from time to time regarding their work, their health, and further schooling; and to determine what effect industry has upon children who enter it.

The child labor law of Illinois requires that, in order to obtain a certificate:

1. The minor must be 14 years of age.
2. He must have completed at least the sixth grade in school and be able to read and write legibly simple sentences in English.
3. He must have a promise of employment.
4. He must be physically fit for the kind of work he is going to do.

The employment certificate is mailed to the employer, and returned by him to the issuing office when the child leaves his employ; this makes it necessary for the child to return for a new certificate.

and have a physical examination each time he changes his employment.

The process of issuing certificates includes:

1. Interviewing the children and inspecting the credentials (proof of age, school record, employer's statement).
2. The physical examination.
3. The clerical and statistical work in connection with both.

The intervening is done by vocational advisers. Besides the central office, there are four district offices where children applying for employment certificates are interviewed. The district adviser has a distinct advantage over the adviser working at the central office, in that each child desiring to leave school for work is referred to her by the principal before the job has been secured and before the school bonds have been broken. The advisers have been able to keep in school 30 per cent or more of the children who have contemplated leaving. Proximity to home and school and knowledge of the industrial situation enable the adviser to study each individual child; to become familiar with his home conditions, his scholarship, and his conduct in school; and to give vocational or educational guidance. The adviser reports to the principal the results of her investigations and her interviews with the child and his parents and, if it seems advisable for the child to leave school, the principal issues a school record. The principals have been instructed not to issue a school record until the child has secured a job and his proof of age. This prevents children from roaming the streets looking for work for long periods when they should be in school. The children are told by the district adviser the procedure necessary to secure an employment certificate. The child's information or record card and all the papers are sent with him to the central office where he has his physical examination. During the rush period at the end of each semester, when large numbers of children are applying for certificates, physicians and clerks are assigned to the district offices and the entire procedure is carried on in the districts as well as at the central office.

The first interview is most important. Full and specific instructions at the time of the first interview often prevent long and unnecessary trips on the part of the children and effect a saving of time on the part of the interviewers. The credentials—the proof of age, the school record, and the employer's statement—are carefully examined to determine whether the child meets the legal requirements. If the child's papers are incomplete, he is given written instructions as to how he may proceed to secure the necessary papers.

If the child does not bring a birth certificate, which is the evidence he must first try to secure under the law, or a baptismal certificate, or a passport, etc., he is sent away with instructions as to where and

how to apply for a birth certificate. If his birth is not recorded, he must bring back to the interviewer a statement to that effect from the bureau of vital statistics. The interviewer must be convinced that the birth certificate can not be secured, before the next evidence is accepted. If it is necessary for the child to send away for his evidence of age, he is told to return to school until he receives a reply.

The child is questioned regarding his grade and school attendance, in order to make sure that the school record has not been issued in error. Occasionally it is found that the child is in the sixth grade but has not completed it, or that he does not meet with the requirement for 130 days' attendance between his thirteenth and fourteenth birthdays or during the last year. In such cases a letter is sent to the principal and the child is returned to school.

The promise of employment is a written statement made by the employer, giving the name of the child, the nature of the employment, the number of hours per day and days per week he is to be employed, and the signature and address of the employer. The child may procure a "promise of employment" blank from the school or the central office. If the occupation to be assigned to the child is prohibited under the law or the hours he is to work are more than eight a day, he is referred to the industrial studies division. A vocational adviser in this department then calls the employer on the telephone or visits him. If an adjustment can not be made, the child is referred to the placement department to be placed in legal employment.

Frequently a child brings a statement from the employer in which the name given the occupation is ambiguous. Employers use different terminology, and it is possible for a job to include illegal features in one establishment, and not include illegal features in another, though the same term has been used in both instances. When there is any doubt, the interviewer sends a request to the industrial studies division to have the establishment and occupation investigated.

A child came into the office with an employer's statement from a candy company, giving the occupation as "candy helper." Any job of "helper" may be looked upon with suspicion, as it usually involves machine work. The investigation in this case showed that the job consisted of—

Breaking up hard candy after it had been spun,
Sifting hard candy to get out the small pieces,
Knocking the candy out of the molds,
Weighing out the ingredients into copper kettles,
Lighting the gas under the kettles,
Watching the thermometer to see that the correct temperature was reached and maintained,

Helping the men pour the candy when done, and spinning the candy on a table.

Two of these processes are hazardous to the child and should be ruled out under section 10 of the Illinois child labor law, namely, the processes that have to do with watching the boiling candy and helping the men to pour it. The employer was told that a certificate would be issued if these duties could be given to a man. The work was adjusted and the certificate was issued.

A record is kept of the first interview, and the missing credentials are indicated on a small card known as the "control" or "index" card. If the child does not return within a week with the necessary papers, or if he is found to be ineligible for an employment certificate, he is reported to the compulsory attendance department. When the applicant's credentials are accepted, the paper showing proof of age is stamped with a board of education impression stamp and, after the nature of the evidence has been noted on a form for that purpose, returned to the child. This prevents another child from using the same document. The "proof of age" form, the school record, and the "control" card are signed by the interviewer and attached to the "information" card containing information concerning the child and the social history of the family. The continuation-school card is made out at this point and clipped to the other papers. The entire record is then sent to the doctor's office and the child is ready for his physical examination.

The medical examiners are employed by the board of education. They aim to make the physical examination as thorough as possible, conforming in general to the standards set by the committee on physical standards for working children appointed by the Children's Bureau of the United States Department of Labor, as well as the standards accepted by industrial physicians. The applicant is first weighed and measured and his eyes are tested. The child is stripped to the waist to allow adequate examination of heart, lungs, and back.

From 20 to 30 per cent of the children examined are found to be physically unfit for work, and their certificates are withheld until such time as an examination shows them to be in good physical condition.

Results of physical examinations of children making first application for certificates between July 1, 1921, and June 30, 1922, were as follows:

Total number of children examined.....	14, 800
Total number of certificates issued.....	15, 553
Total number of children held..... (21.3 per cent)	4, 201
Total number of defects, for 4,201 children.....	6, 905

Kind of defect.	Defects.	Defects corrected.
Nose and throat findings:		
Nasal obstruction.....		
Hypertrophied and infected tonsils.....		
Hypertrophied and infected adenoids.....		
Acute rhinitis.....	1,352	692
Acute laryngitis.....		
Acute pharyngitis.....		
Defective speech.....	2	0
Defective teeth.....	1,858	1,235
Disease of the eye.....	1,033	737
Defective vision.....		
Discharging ears.....	12	2
Defective hearing.....		
Thyroid:		
Hypertrophied (simple)		
With toxic symptoms.....	119	56
Hypertrophied glands:		
General adenopathy.....		
Tubercular adenitis.....	22	5
Pulmonary diseases:		
Acute bronchitis.....		
Chronic bronchitis.....		
Pulmonary tuberculosis.....	106	49
Asthma.....		
Malnutrition.....	1,253	598
Undersize and immaturity.....	194	62
Anemia.....	38	10
Kidney disease.....	5	0
Urinalysis.....	15	8
Wasserman.....		
Genito-urinary disease.....	11	3
Laboratory examinations:		
a. Electrocardiograph.....		
b. General blood count.....		
c. Blood pressure.....	10	3
d. X-ray.....		
Neurological examination:		
Subnormal.....		
Nervous conditions.....	41	15
Mental test.....		
Pulse.....	14	4
Temperature.....	15	5
Orthopedic defects:		
a. Malformation.....		
b. Deformities.....		
c. Spinal curvature.....	34	14
d. Fatigue posture.....		
Hernia.....	13	9
Vaccinations.....	9	8
Hold for report.....	24	8
Unusual findings.....	6	1

The child is examined for the particular occupation specified in the promise of employment. If the physician does not consider him physically fit for this occupation, he is referred to the placement department for lighter work, or his employment certificate is refused altogether. Whether the refusal is temporary or permanent depends upon the child's physical welfare.

The doctors frequently find that in order to make a decision as to whether a child with certain physical defects should have a certificate they must know exactly what the surroundings are in an establishment and exactly what the child will have to do. Such cases are referred to the industrial studies division for investigation.

A small boy who had a heart condition which prevented him from doing any except light work without injury was to be employed as an errand boy for an electrical concern. A visit was made to ascer-

ates the unemployment of the child. If the child fails to apply for a renewal of his certificate within a week, he is reported to the compulsory attendance department for return to school. All children who fail to meet the age, educational, or physical requirements are likewise reported.

The continuation school law provides that all children between the ages of 14 and 16 must attend continuation school eight hours a week. Employment certificates are not mailed to employers until the continuation-school office reports that the children have been assigned to continuation school. As all certificates are mailed the day the application is approved, this procedure causes no delay and insures the child's assignment to continuation school. The notice requiring the child's attendance at continuation school two half days a week is mailed with the certificate to the employer.

The continuation schools are notified of those children whose certificates are returned, signifying that they are out of employment, in order that the schools may secure the daily attendance of such children until they find other jobs. If other employment is not found within a limited period, the child is required to return to full-time day school. A notice is also sent to the continuation school, should the child again secure a certificate.

A weekly report is sent to each regular day school, giving the names of the children to whom, during the week, certificates have been issued for the first time. The principals can then secure the return to school of the children who have failed to get certificates after receiving their school records.

It has been customary to refer to the factory-inspection department all child-labor violations which come to our attention. This year a new development in the work has been the assignment of a deputy factory inspector to the vocational guidance and employment-certificate bureau. Complaints of child-labor violations come to us from every source—from the principals and teachers, from the attendance officers, from the continuation schools, from interested neighbors, and from the children themselves. The complaints have to do with the hours worked in excess of the legal eight hours, work after 7 p. m., and children working without certificates and at illegal jobs such as work in connection with power-driven machinery. The case is looked up in the files to get the latest data on the children and then turned over to the deputy inspector. Besides protecting the children and solving their individual problems through the enforcement of the child labor law, this arrangement with the deputy inspector has made it possible to keep in close touch with conditions in the establishments in which minors are employed.

It is the task of the employment-certificate office to inform the employer, the teachers and principals, the children and parents, and the community, of the requirements of the child labor law, in order to secure enforcement and reduce the child-labor violations to a minimum. The vocational guidance and employment-certificate department has sent posters into the schools, calling the attention of the children to the fact that if they work after school hours they must secure employment certificates. Full instructions regarding the necessary procedure for securing employment certificates have been sent to the principals. An illustrated pamphlet on the child labor and continuation school laws has been prepared in simple form to distribute to the children going to work. The principals have been invited in groups to visit the employment-certificate office; the procedure the child must follow to secure an employment certificate and how the principals may assist in securing better enforcement of the law have been carefully explained to them. Literature setting forth the conditions which children face when they leave school for work at 14 has been sent to the teachers, to be used in presenting arguments to children for staying in school. An illustrated pamphlet has been prepared, showing the opportunities for training available in the high schools, the vocational courses offered, and the occupations to which they lead. Such efforts have helped greatly toward inducing the children to remain in school until they are better equipped to enter industry, and so have aided in decreasing child labor.

It is the aim of the vocational guidance and employment-certificate department of the Chicago public schools to reduce child labor to a minimum; to keep children in school by the aid of scholarships if they can not remain under other conditions; and to see that every child going to work has the benefit of advice, guidance, and employment supervision during the first years of his working life.

THE RELATION OF CERTIFICATE ISSUANCE TO THE ENFORCEMENT OF SCHOOL ATTENDANCE LAWS.

ARTHUR P. LEDERLE, *Supervisor of Attendance, Board of Education, Detroit, Mich.*

The relation between certificate issuance and the enforcement of school attendance laws seems so obvious, and the work has been so closely correlated in most communities, that it is impossible to discuss one without discussing the other.

Investigations conducted by the Federal Bureau of Education seem to indicate that that community prospers most which educates its citizens best. We like to believe that this State of Massachusetts

is prosperous and its per capita wealth large because of its splendid educational facilities; and there is a growing belief in this country that money invested in education is the best investment that the taxpayers of any community can make.

Miss Blake, of New York, stated last night in a paper given before the National Education Association¹ that in her city 50 per cent of the children left school before entering high school. I will attempt to show how it has been possible in Detroit to increase the period of the child's school life through the administration of the employment certificate law. In considering this subject we must always remember that all child labor legislation is statute law, and as such has been enacted by the 48 different legislatures. It is thus possible to have 48 different types of employment permit acts. As my experience has been entirely with Michigan laws, I must confine my discussion to the city of Detroit. I am assuming, however, that the child labor and school attendance laws in the other States are sufficiently similar to ours that what I say about Detroit may apply to a greater or less extent to other communities.

At first, child labor legislation and school attendance laws developed in Michigan independently of each other. In recent years, however, there has been a tendency to combine and coordinate these two types of laws. The Michigan child labor law prohibits the employment of children under 16 years of age during school hours without permits. Farm labor and domestic service are exceptions. Children may be granted permits to work if they satisfy the following conditions: (1) They must be 15 years of age; (2) they must have completed the sixth grade; (3) they must have attended school 100 days during the school year previous to their arriving at the age of 15 or during the year previous to applying for a school record; (4) it must be necessary for them to work to support themselves or their parents. The permit is issued by the superintendent of schools.

The compulsory education law requires that children attend school until 16 years of age with the following exceptions: A child who is 14, who has completed the sixth grade, may be excused if his services are essential to the support of himself or his parents, and a child who has completed the eighth grade may be excused if he has an employment permit, or wishes to remain at home or work at some occupation that does not require a permit. You will note, therefore, that it is possible to have a child out of school and employed at 14 years of age.

There are about 25,000 children in Detroit 14 and 15 years of age, and they would nearly all be eligible to leave school except for the economic necessity clause. However, on June 20, 1922, only 263 of

¹ Proceedings of the National Education Association, Sixteenth Annual Meeting, Boston, July, 1922, p. 215. Washington, 1922.

these children were actually out of school and employed, and I feel confident that on June 20, 1923, Detroit will be able to make the proud boast that not a child under 16 is permitted to leave school to go to work. We have concluded that the standard set by the Children's Bureau that no child shall leave school until he has reached the full age of 16 years should be the minimum for the city of Detroit. We believe with Miss Blake that there is plenty of money for the children in Detroit if the adults do not burn it up, and we have gone on record as saying that we do not want the children of Detroit to go to work to maintain the city. After all, there is only one reason why a 15-year-old child should go to work, and that is to reduce taxation, and so far as I am concerned as a taxpayer, I do not wish to have any child stop school before he is 16 years old for the purpose of reducing taxes. In the end Detroit is going to profit by the increased length of the school period, as our citizens will be able to earn more money because of their 10 years' schooling than if they were permitted to leave school at the end of 4 or 5 years.

The principal means by which this reduction in child labor has been brought about in Detroit has been a constructive interpretation of the poverty exemption clause. In conclusion to this part of the discussion, I will say that whereas poverty exemptions of all kinds are wrong in theory, and all of us rebel at the thought that a child should be compelled to give up his right to education merely because the parents happen to be poor, in actual practice such exemptions can be rendered unimportant. If the attendance department is alert enough, it will find means for solving economic problems in the home of the school child without taking the child out of school. The value of a provision whereby children of poor parents may be excused from school at an earlier age than other children lies only in the fact that it makes it easier to get legislatures to raise the compulsory school age to what may be in effect a 16-year standard.

The second way in which the permit is important in relation to school attendance is in connection with the system of child accounting. It is my opinion that the most important phase of the whole school-attendance problem is child accounting. For a number of years in Detroit we have maintained a continuous school census, and we have developed it now so that it is functioning in a highly efficient manner. We maintain a card for every child in the city from 5 to 19 years of age, inclusive, with a cross-index, and once each year we make a house-to-house canvass of the entire city. The results of this field canvass are checked against the census cards to complete the school census, and also to see that all of the children of school age are enrolled in some school. During the school year we receive reports from every public, private, and parochial school in the city

for each child who enters or leaves school. We also get reports from the juvenile detention home, the police department, the marriage license office, and many other agencies. At least once each year, we ask each school to submit a complete enrollment. In this way we have an accurate check on every school child.

Our system would be incomplete, however, if children were not required to have permits before entering employment. This is especially true in regard to the part-time school which is now operated in Detroit for those children under 17 years of age who are not in regular day school. The law requires that no child under 17 years of age enter employment without a permit, and in case this requirement is disregarded penalizes the employer. We are authorized to revoke permits of children who are not attending continuation school regularly, and this is usually all that is necessary to keep the child in the part-time school. We try to cooperate with the employers in every way possible. We ask them to see that their lists of minor employees check with our census records. If, however, they fail or refuse to cooperate with us, we do everything possible to make them pay the penalty for their negligence.

By means of the employment permit, we also impress upon the child and his parents the fact that we are interested in the child's welfare up to the time he has reached his seventeenth birthday. We are in this way able to convince many children and their parents that the children should remain in school longer. It brings the children into contact with the school authorities before they permanently sever their connection with the school. This makes it possible for adjustments to be made in some cases so that the child's parents are satisfied, and the child's school life lengthened. This has operated to increase the number of children in the high schools. During the past year, the number of children in the ninth grade has equaled and sometimes exceeded the number of children in the eighth grade in Detroit.

THE VALUE OF CERTIFICATE-OFFICE RECORDS TO THE STUDENT OF CHILD-LABOR PROBLEMS.

M. EDITH CAMPBELL, *Director, Vocation Bureau, Cincinnati Public Schools.*

In attempting to substitute for Mrs. Helen Thompson Woolley to-day I have not only a sense of my inadequacy, but one of great regret that you can not have her clear and forceful presentation and her own analysis of her wide experience covering a period of 10 years as administrator of an employment-certificate office.

For an incredibly long time public schools either entirely overlooked or neglected their most important laboratory—the office where employment certificates were issued to children who were

leaving school to go to work. Twelve or fifteen years ago students of child labor began to insist that these certificates provided a fund of information the value of which could not be overestimated.

In 1915, several years after the Board of Education of Cincinnati had placed the issuance of employment certificates under the direction of Doctor Woolley, she wrote a paper on this function from which I quote:

Working permits may have a very direct bearing on school problems or none at all, depending on how they are issued and what use is made of the information obtainable through issuing them. Statistics of working permits are vital statistics of the school. They correspond to the death rate of the community. The usefulness of statistics of the death rate depends on how accurately the records are taken and how carefully they are analyzed. Most communities plan their campaigns of health and sanitation on the basis of their vital statistics. The statistics regarding working permits should have just as direct a bearing on school problems.¹

Mrs. Woolley then gave a number of facts based upon certificate records:

1. Retardation.

The amount of retardation among children who leave school to go to work is more than twice as great as it is in the school system at large. Types of classes in the schools should be formed to meet this situation, and probably the most efficient type of law will prove to be one which provides a part-time system of education up to 18 years, such that the first steps in industrial life will be taken in close cooperation with the school.

2. Shifters in industry.

Every employer complains of the instability of labor and the expense of hiring and firing each year an endless succession of beginners. * * * Measured in school standards, then, the worst shifters were the inferior children. The first step the employer should take in guarding against this evil is to give a preference to children who have done well for their age in school.

3. The comparison of children who go to work early with those who remain in school.

According to the tests, then, the group of children which drops out of school at 14 is mentally inferior to the group which remains in school. The judgment of the school, expressed in the great retardation of the working group, is confirmed by the tests, and tests form a method of measurement sufficiently different from school work to make their results an important piece of additional evidence.

4. Wage-earning capacity of children who leave school at 14.

There is no correlation either negative or positive between earning capacity and school grade.

These statements of Mrs. Woolley's have been more than confirmed. There is almost no phase of the child-labor problem which

¹ "The issuing of working permits and its bearing on other school problems," in *School and Society*, May 22, 1915.

is not connected with the employment certificate, and every phase of the educational process could be amazingly illuminated by careful analysis of these working permits.

During the period 1911-1922, there have been two changes in Ohio's child labor law—changes which have greatly increased the power of the State in supervising the working child, and the responsibility of the school in providing this child with adequate guardianship. The law in 1913-14 raised the age requirement for boys from 14 to 15 years with a sixth-grade school requirement, that for girls from 14 to 16 years with a seventh-grade school requirement. Boys were required to have certificates until the age of 16, girls until the age of 18. The present law, which went into effect in August, 1921, was based upon the facts presented by the certificate offices. The age of 16 years was made the minimum for both boys and girls, with a seventh-grade school requirement. The futility of a different age and school requirement for boys and girls had been demonstrated by the steady demand for certificates on the part of girls, by the amount of retardation for girls which shows an increase with the 16-year age limit, and by the difficulties in administration and enforcement of the law. We were also completely convinced that the girl did not need protection more than the boy for the sake of either health, morality, or education. If more facts had been available from the issuance of certificates, the law in 1914 would not have made this difference between boys and girls.

Under the new law the requirement for age proof was made more stringent than ever before, and hence the necessity for birth registration brought more urgently to the attention of the public. No more serious problem than this confronts the student of child labor and of education. The Cincinnati Board of Health has been lamentably cut in funds, to the great detriment of its department of vital statistics; so much so that the chief health officer recently found himself unable to continue to give children copies of their birth records. Through the pressure of the strict issuance of employment certificates the work of this department has been made a more effective function of the board of health. We are also attempting through the cumulative record card to have the child's age established when he enters school. If this could be validly done an enormous amount of time and expense would be saved the public-school system, which now simply postpones this age certification from the fifth to the sixteenth year.

The procedure of the employment-certificate office has had a constant influence upon standards of health for the child. When we first began the issuance of certificates, almost no child was refused a certificate because of inability to come up to the health standard

of the law, and then only when great pressure was brought to bear upon the district physician. Last year the employment-certificate office required physical examinations of 2,681 children, none of whom was accepted until health recommendations were carried out. Acting upon these results, the writers of the present law greatly raised health requirements—so much so that many felt the impossibility of administering this part of the law because of lack of physicians and adequate funds. But the law was passed, and an effort has been made to give each child an examination more thorough than those given in former years. This procedure has brought the physicians of the board of health—our examiners—more directly into contact with industrial medicine, has more sharply confronted them with a specific public-health problem, and has brought to our assistance the cooperation of the Cincinnati Public Health Federation—a most effective organization.

The present law provides for the issuance of full-time vacation certificates, thus sanctioning work for children of 14 years when school is not in session and recognizing the distinction between employment during the school term and employment during vacation. During the period June 20–August 25, 1922, 756 of these certificates were issued, more than 400 of which were returned by September 1 without follow-up work. These children create additional attendance problems, and probably a few more children go into cooperative and part-time work as a result of the issuance of vacation certificates. We realized that many children were working illegally without certificates. We were able, however, to compel the initial physical examination of these 756 children and to make some effort for supervision. Thus the certificate method slowly, step by step, impresses upon industry, the school, and the parent that every entrance of a child into industry must be sanctioned and guarded by the State.

The amazing ignorance and indifference of the public schools as to what happens to the children who go to work has been considerably lessened through the effort of those who realized the value of work-certificate records. These records have shown a significant amount of retardation, never decreasing and in many years increasing, as continuously shown in Mrs. Woolley's annual reports. The effect of these statistics has been to increase the scope of continuation, cooperative, and part-time classes, under the provisions of the new law, and to provide for the issuance of the certificate to retarded children.

Again the opponents of the law and of vocational education claimed these extensive provisions could never be met. In many communities in Ohio they have not been met. But they have forced the schools and industry to face the fact that the child must be more

carefully guarded and supervised on his entrance into working life. The present law requires the school at least to know where the child is until he is 18 years of age, and the working permit has indeed begun the "vital statistics of the school." It has also begun to impress upon the tax-paying public that the child who goes to work at 15 or 16 has just as much right to the advantage of school funds, used for guidance and guardianship, as has the high-school child who often avails himself of these funds until he is 18 years of age. In the high-school group are only 10 per cent of our children; the great majority go out from the sixth and seventh grades with their most crying needs unheeded.

The mere knowledge of where the working child is going (far too often his ignorance of "where" is an indictment of the school), the grade he has completed, the relation (and again the sorry nonrelation) of his grade to his job, the condition of his health, and much else, show the need for complete reorganization of our present grade system. Superintendent Condon, of Cincinnati, has asked a committee to work out this problem for the school system. The committee report was based not only upon facts about the working child, but also upon extremely interesting figures compiled by some of the principals upon retardation and the overwhelming number of failures and withdrawals in high schools.

The Children's Bureau is also bringing to light interesting data by investigating the correlation between grade and job in cases in which working permits have been issued by the Cincinnati office.

The evident lack of correlation between wages, type of position, and school grade, as shown in certificate records, emphasizes increasingly and constantly the need for intensive study of the industry and the occupation into which the child is certificated. The expense and burden of this analysis should be assumed by industry, which is still reluctant to initiate and plan such studies. In consequence, we have on the one hand the schools attempting to train the child for some unknown occupation and on the other hand industry bitterly complaining that the child is untrained for industrial tasks. Until the school and industry frankly, intelligently, and with undoubting confidence in each other discuss processes, wages, hours, educative motives, the deadly effect of monotony, and all else that concerns the real life of the child, no actual progress will be made, as Mrs. Woolley writes, "in bringing about those modifications of educational systems and procedures which will make of education a more effective instrument in helping each child to reach ultimately a wise adjustment to the occupational world."

I have not attempted to emphasize the question of mental differences shown by the employment-certificate records. In the Cincinnati vocation bureau we are depending more and more upon the

psychological test for assistance in handling individual children. I again refer to Mrs. Woolley's paper and to her annual report, the convincing statements and statistics of which prove the undoubted wisdom of a classification and reorganization in the school system based upon the fact that, as Doctor Whipple says, "the existence of fundamental and relatively permanent individual differences in intellectual capacity has been incontrovertibly demonstrated; that the real meaning of democracy is properly safeguarded in the notion of 'equity of opportunity,' and if any nation is destined to perish it is that one which fails to provide the best possible educational training for those of its rising generation that show promise of intellectual leadership."

Provision for this group should include not only facilities for educational training but extensive scholarship funds. The Cincinnati bureau is now administering \$6,000 a year in scholarships for a group of superior children who are 16 years of age and would otherwise be compelled to go to work. The fund is a part of the budget contributed by the community chest to the vocation bureau, which is a joint enterprise of the public schools and the council of social agencies.

Experience in issuing employment certificates has constantly justified the method of placing this responsibility on boards of education. The question whether one group can more ably perform this task than another one, such as boards of health or industrial commissions, depends, of course, upon the personnel—which is always the secret of effective work. The training and ability of the issuing officer is of paramount importance, and every effort should be made to raise the standard for the officers; but the great hope of breaking into the present rigidity of school grades and classes is the teacher's constant and vital contact with the success or failure of the working child after he leaves the schoolroom. This knowledge can be given, and the teacher stimulated to secure this information, only when the school system is held entirely responsible for permitting the child to go to work. Presenting to the child a legitimate choice between work and school is a serious responsibility. Such a responsibility must inevitably compel the schools to exercise this right only when they have exhausted every possible resource for the wise guidance and supervision of the working child.

At the end of a long day this summer when more than 400 children had passed through the office, a small colored boy presented himself to a weary clerk. She had exhausted every apparent clue to a birth record and finally in desperation asked, "John, do you know the name of the doctor who was with your mother when you were born?"—to which the bewildered little boy solemnly replied, "No'm—I don' 'zactly remembah—I wuz right small then." In the years to come many a man and woman who as a child came to the employ-

ment-certificate office, with the right to expect of us knowledge of industry and all that was necessary for wise advice, may say to us somewhat bitterly, "You should have told me what to do; 'I wuz right small then'!"

DISCUSSION.

GEORGE CHATFIELD, *Assistant Director, Bureau of Attendance, Department of Education, New York City.* The most important and most striking of all the points brought out here this afternoon is that make what laws you will about these children as to the age when they may leave school, in some way or other those laws will be evaded unless the schools do something for these children's individual needs.

Now, our schools are organized in a certain system. I do not think that any particular individual is responsible for that system in the schools as they are now. We are all responsible for it. But the fact remains that we will not do for these children the things that they want, and a very large percentage leave school because they are mighty glad to get out. That means only one thing—that they have failed. People do not usually quit doing things that they like to do and in which they have been successful, and they have not been successful in this. I hesitate to speak after the scientific reserve that Miss Campbell has exhibited on the matter; but I do not know but what the fact is that the reason there is no correlation between the things that children do and the grade at which they leave school is that the grade in which they are in school and the work they are doing in school does not necessarily measure their ability or capacity.

We have had our standards raised in New York one year after another. At the present time we are compelling all children under 17 who have not completed the elementary grades to attend school. We have a very difficult job to make them stay in school. We have not yet found how to adjust the continuation-school program to the needs of the children. I do not think we have accomplished much for the children except to keep them in school and out of some dangerous employment. We have not given them any better education, and we have certainly increased the school congestion tremendously. I think a different kind of solution from the one suggested is needed, and then we shall not have to have these laws to keep children in school.

To pass from this question to that of children obliged to go to work because of family need, I think that this is not a matter for private charity, but that it is the State's business to step in there just as much as it is in the cases of the widows' pension fund.

If we ever get our school system into such shape that it can handle our children in a rational way, a good many of these other problems will be solved.

MISS CAMPBELL. In Ohio we have State relief for children who are obliged to go to work because of family need. The board of education spends several thousand dollars every year in the relief, but the public are opposed to it.

THE CHAIRMAN. They like the idea of the scholarship, but they do not like the word "relief"?

MISS CAMPBELL. Yes; that is the reason.

MR. LEDERLE. We have State relief in Michigan, but we are not using it in Detroit. It is limited to \$3 a week.

THE CHAIRMAN. Suppose you tell us, Mr. Lederle, how you reduced the number of employed children from 1,700 to 200?

MR. LEDERLE. Our attendance officers are trained social workers with an educational background. They all occupy substantially the same position in the community as high-school teachers. They are selected from people in the schools who are specially fitted for this kind of work. When the child wants to leave school the entire family problem is gone into. We find that by making the family budget and studying the family's problem, getting the older people to work and getting the father into a position that pays him better, we can help the family so that we do not have to give them any money. A large proportion of the children who leave school and go to work come from the lower class mentally. The parents are possibly able to earn enough to support the family, but have not been able to manage the home properly. We have assisted them in managing the home. The time we made our greatest progress was in the time of unemployment, when there were 50,000 or 60,000 men out of work in Detroit. We took the matter up with the mayor and the department of public welfare and they agreed to grant temporary relief to the families where necessary, but we found as a practical matter that it was not necessary.

THE CHAIRMAN. That was not true of the families of the 50,000 who were without income.

MR. LEDERLE. In case an older member of the family was not working, we would not grant a permit to a child, but would get employment for the adult. The public welfare department assisted in this plan.

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PART II.

THE RELATION OF STATE AGENCIES TO THE LOCAL ISSUING OFFICE.

STATE SUPERVISION OF THE ISSUANCE OF EMPLOYMENT CERTIFICATES.

TAYLOR FRYE, *Assistant to the Industrial Commission of Wisconsin.*

During the first 32 years of its existence—from 1867 to 1899—the child labor law of Wisconsin contained no provision for employment certificates (or child-labor permits, as we call them). In 1899 the statutes were amended to provide for the permit, and the requirement has been in force continuously since that time. Previous to September 1, 1917, power to issue permits for child labor was placed by statute in the hands of the labor department and of county, municipal, and juvenile court judges. During the latter part of this period judges were required to file copies of permits issued by them with the labor department. The head of the labor department was authorized to revoke a permit which appeared to have been unlawfully or irregularly issued, but he had no effective means of preventing repetition of the irregularity. On one occasion a judge maintained that if the department revoked a certain permit he would issue another, and that he would continue to issue as long as the department continued to revoke. In the presence of such determination the department was practically helpless.

On September 1, 1917, the permit age was raised to 17. On the same date an amendment to the compensation law became effective which provides that if a minor of permit age is injured while employed without a permit, or if a minor of permit age or over is injured while employed at prohibited work, such minor shall be entitled to treble compensation for the injury, and that the employer shall be primarily liable for the payment of the additional compensation.

Following this legislation, demand for changes in the statutes to render possible a more efficient administration of the provisions of the child labor law became increasingly insistent. The response later in the same legislative session was a statutory provision placing upon the State industrial commission full responsibility for the issuance of child-labor permits, and giving the commission authority to desig-

nate persons to assist with the work. At the same time a statute was enacted giving the commission authority to refuse to issue a labor permit if, in its judgment, the best interests of the child concerned would be served by such refusal. The vital importance of this last-named statute can not be overestimated.

In the appointment of permit officers the commission is not limited to any class or condition. It endeavors, however, to secure the services of people already connected in some capacity with public service. In practice, all appointments terminate on June 30 each year, unless for special reasons it is ordered otherwise. Under no conditions does an appointment hold for more than one year without renewal. During the five years of operation of this system we have designated 484 persons as permit officers. Of these, 209 are acting at the present time. The changes in the personnel have been far fewer than we feared they would be when the system was inaugurated. The 209 active permit officers are classified as follows: School officials, 108; judges, 44; justices of the peace, 16; bank officials, 14; village clerks, 8; miscellaneous (including attorneys, merchants, physicians, clergymen, and others), 19.

Before a new permit officer is designated, the character of the work is explained to him—either by letter or in person—and he is given an opportunity to say frankly and without embarrassment whether he can and will give the time and sympathetic attention to the work which its proper performance requires. Our advances are sometimes, but not often, repelled. Every class to which we have appealed for help has furnished its quota, small though it may have been, of individuals who have refused. When this occurs, our hearts go out in silent thankfulness that our statutes do not confer upon that individual the power and impose upon him the duty to issue permits for the employment of our young.

We try to make every permit officer realize that he is a member of our organization: that we will try to help him in every possible way, and that he will not be subjected to unkind criticism and fault-finding. He is encouraged to submit doubtful cases to the commission for advice before acting.

Close cooperation with the schools is maintained. It is the statutory prerogative of the schools to certify to the educational attainments of the child seeking a work permit. This prerogative is always respected. The commission goes further than the statute. School officials are requested to recommend for or against the issuance of the permit, regardless of the fact that the child qualifies educationally. Sometimes, but not frequently, this request for a recommendation is declined. In no instance has a permit been issued against the recommendation of the school official. On the contrary, in many instances we have been able to prevail upon the parents to keep the

child in school even after a favorable recommendation. School officials are encouraged to use every legitimate means at their command to induce children to remain in school and their parents to keep them there.

Approximately one-half of our permits are issued in the city of Milwaukee under the direct supervision of regular employees of the commission. About 70 per cent of the remainder are issued in cities maintaining day vocational [continuation] schools. We have 38 such cities, exclusive of Milwaukee, including all our important industrial centers. In 16 of these cities the director of the vocational school is the permit officer, but in each such case the appointment is made on the recommendation of the regular superintendent of schools, who is first given an opportunity to do the work. This concentration of the work in the hands of a comparatively small number of permit officers favors close supervision by the commission of the issuing of working papers to the great majority of our working children.

There is but one standard for employment certificates in Wisconsin—that fixed by statute and by the lawful orders of the industrial commission. It is our constant endeavor to maintain that standard throughout the State.

Copies of permits, containing a statement of the evidence on which they are issued, must be sent to the industrial commission. Our aim is to have these copies sent in at least semimonthly. Records are kept of these returns and communications are sent or visits made to permit-issuing officers who do not send in these copies. All copies of permits are checked promptly upon receipt, and if any irregularities appear they are called to the attention of the permit officer for correction. Contrary to preconceived notions, we have comparatively little trouble in getting corrections made—far less, we believe, than would be the case were the permit officer holding under statutory appointment.

Employment of the child is limited to the employer named in the permit. When the employment terminates, the employer must return the permit to the office where it was issued. Before the child can again be lawfully employed, a new permit must be issued or the old one must be reissued. A record of each reissued permit must be sent to the industrial commission. All blanks used in the issuance of permits are supplied by the commission.

Familiarity with the provisions of the child labor law is an essential part of the equipment of all deputies of the commission charged with inspection work. Special measures are taken, however, to educate and train the woman inspectors who are especially intrusted with the enforcement of the laws relating to woman and

child labor, with respect to every detail of the law and its administration. Stress is laid upon the spirit and purpose of the law and regulations and the administrative policy of the commission. No woman inspector is deemed adequately equipped until she is thoroughly acquainted and in full sympathy with all the essentials of the legislative and administrative scheme for the protection of the working child and is a tactful and accomplished advocate of that scheme.

An essential part of the woman inspector's duties is to confer with the permit officer. She checks over his records, advises him of what she has found of interest to him in the local situation, encourages, exhorts, educates, corrects, and inspires him as conditions demand and warrant. This education of the permit officer is a tremendously important part of the work. We have found it to be a painfully common disposition of permit officers to break down standards, particularly in so-called special cases.

After all, it should be remembered that the issuance of the work certificate is not an end in itself. It is a means to an end. Proper protection for the child is the end. Frequently it is essential to his protection that the permit shall not be issued, regardless of the fact that he can qualify for it under the law. For example, he should be protected from hazardous employments and from careless, reckless, indifferent, or exploiting employers. The commission is on constant guard in these respects. Under its statutory power, it withholds permits when in its judgment such action is for any reason in the best interests of the child. Does an employer adopt the policy of discharging permit children as soon as their age and experience entitle them to pass to a higher wage classification and of taking on new recruits at the low wage? His attention is called by the commission's representative to the objections to this policy, and unless the policy is promptly changed he is not permitted to employ permit children. Does an employer fail so to organize his shop that children will be given the necessary supervision to keep their employment within lawful and proper limitations at all times? He is offered opportunity and help to correct the situation. Upon his failure to do so, he is not permitted to employ children.

Do investigations and experience demonstrate that unusual moral hazards exist for the young in any occupation? The commission resolves that permits shall not be issued to children for that occupation, advises the permit officers, and permits are stopped. Are there occupations in which it is impossible for the commission to supervise the employment of children of permit age as the law contemplates it shall do? Permits are not issued for the employment of children in those occupations. Does an employer of children

in street-messenger service, knowing that a child whose place of employment is the street has only a remote chance of recovering damages from his employer in a common-law action for injuries received in the course of his employment, adopt the policy of operating outside the provisions of the compensation law in order to save compensation-insurance premiums, thereby throwing practically all the hazards of the employment upon the child? The reprehensible features of this policy from the viewpoint of the interests of the child and the State are pointed out to him, and he is given an opportunity to come under the act and assume his reasonable responsibilities. Failing, the issuance of permits to children to work for him is stopped.

These are not fanciful illustrations, as will appear from the following typical resolutions¹ adopted and put into effect by the commission:

1. *Resolved*, That permits shall not be granted to minors under 17 years of age to work in bowling alleys.

2. *Resolved*, That permits shall not be granted to girls under 17 years of age to work in any hotel, clubhouse, restaurant, boarding or rooming house, including boarding and rooming places conducted by industrial plants for their own employees.

3. *Resolved*, That permits shall not be issued to children under 16 years of age to work in lumbering and logging operations.

4. *Resolved*, That no permit shall be granted to any child to work in any place of employment in which an active strike or lockout of the employees is in progress.

5. *Resolved*, That no permit shall be granted for the employment of any child in messenger service on the streets by employers who are operating outside of the provisions of the compensation act.

6. *Resolved*, That no labor permit shall be granted for the employment of any child in any capacity in road construction.

By circular and personal letters and personal conferences permit officers are kept informed on the actions and policies of the commission.

We are sometimes asked what we do if a permit officer refuses to conform to the standards. Well, we try to educate him. We try to have him get the vision. If we finally fail, we apply a gentle but effective soporific, and when the patient awakes we have his voluntary resignation—or an equivalent—in our hands. We have been compelled in a few instances to dispense with the services of permit officers on our own motion, but I do not recall an instance in which our action aroused resentment. The commission would not tolerate a defiant attitude on the part of a permit officer any more than it would on the part of any other member of its organization.

¹ The industrial commission has the right to make rulings which have the force of law relative to the exercise of its powers to enforce laws relating to child labor.

I am frank to say that I do not know how we could handle such cases if the permit officer held under statutory appointment. And in this connection it should be remembered that common sense, wisdom, tact, judgment, moral backbone, and vision can not be conferred upon individuals by statute.

One of the most powerful influences operating to secure compliance with the child labor law in Wisconsin is the treble compensation statute before referred to. Under this statute, the compensation-insurance carrier is secondarily liable and must pay the extra compensation only if the employer is unable to meet the obligation. The extra compensation in a maximum case is a little more than \$26,000. All accidents to minors are investigated with reference to the legality of the employment, and with the help of our—in the main—sympathetic corps of permit officers we are able, with almost deadly certainty, to determine that question. Under this statute, compensation-insurance companies—as well as employers—are financially interested in preventing violations of the law. Educational campaigns are continually being carried on by these companies to educate their policyholders in the necessity of a strict compliance with the permit law. During the last five years hundreds of thousands of pieces of literature prepared by the commission, explanatory of the permit and other provisions of the child labor law and the dangers incident to their violation, have been distributed by the insurance companies.

Child labor statutes, at least those of Wisconsin, are not simple and easily understood. The commission is constantly receiving requests for construction and explanation of the terms of the statutes. Not a few of these requests come from judges and attorneys. There have been recent instances in which our supreme court has reversed our circuit courts on interpretations of the law. Multiplicity of interpretations could not fail to be disastrous. The statute must not mean one thing in Milwaukee, another in Superior, and still another in Madison. Its application is uniform throughout the State when it comes before our supreme court. It is vital that it be so before it reaches that tribunal. In these circumstances it has been most helpful to have a central State body clothed with power to interpret and apply the law, and whose decisions are of State-wide force and effect unless and until overruled by the courts.

Under our statutes a permit, even though issued in contravention of the provisions of the law and of the regulations of the commission, if issued by a duly appointed permit officer, protects the employer so long as he keeps the employment of the child within the terms of the permit. In these circumstances it will readily be seen how a careless or incompetent permit officer may sacrifice the vital

interests of the child. For example, on some flimsy and unreliable proof of age a permit is issued to a child as over 16 years of age when, in fact, he is under 16. This permit opens up to this child the whole field of employment prohibited by statute to children under 16. The child is put at one of these hazardous employments and severely injured. The permit deprives the child of his right to sue for damages at common law, and it protects the employer from the payment of treble compensation. The injured child gets only regular compensation and is compelled alone to bear the terrible burden placed upon his young shoulders by the defaulting permit officer.

Permit officers who are made to realize their great responsibilities and the disastrous consequences which may follow any lapse on their part, are slow to wander from the path of safety marked out for their feet by the statutes and regulations of the commission. And all the time it is a matter of solicitude—yea, of increasing solicitude—on the part of the commission, that the supervision of his work shall be so close that no irregularity in the permit, whether due to intent, inadvertence, oversight, or incompetency on the part of the permit officer, shall go undetected and uncorrected. The success of our efforts may, in a measure, be indicated by the fact that during the five years of operation of the present system the legality of the permit has not once been injected as a vital issue into the disposition of the claim of an injured child.

In closing, I desire to submit that not all our energies in Wisconsin are being used to uphold existing standards. With one hand we are holding tenaciously to what has been gained; with the other we are reaching out for better things for the childhood of our State. Figuratively speaking, our extended hand is being grasped by great and increasing numbers of sympathetic people. As among the people who are joining us in this work, we have perhaps a peculiar feeling of gratitude and admiration for our permit officers. They have responded to the call to unselfish service, oftentimes at the expense of time and energy which they can ill afford. On the whole, their work is good and steadily growing better. The commission appreciates their help and is not backward about letting them know it.

And now, do we claim 100 per cent efficiency? By no means. None can be more conscious of our shortcomings than we ourselves. But we are on guard. A thousand eyes are watching for defects and a thousand minds are ready to offer suggestions and help for their correction. Whatever elements of weakness the centralized system in Wisconsin has developed, we know that its elements of strength so far overshadow them that they can not be considered as of vital consequence and that in this work we can safely say, in the

somewhat paraphrased language of Dickens, that prince among the friends of childhood, "It is a far, far better thing that we now do than we have ever done. It is a far, far better rest that the children of Wisconsin now have from premature and blighting toil than they have ever known."

DISCUSSION.

JAMES N. PRINGLE, Deputy Commissioner, State Board of Education, New Hampshire. In contrast to the plan in effect in Wisconsin, the administration of all child labor laws in New Hampshire is in the hands of the school authorities. While there is cordial cooperation between the labor and education departments, the inspectors of the department of labor have no direct responsibility for the enforcement of laws relative to the employment of children under 16.

All superintendents of schools, city as well as rural, are employed by the State board of education on the nomination of the local boards. There are 64 "supervisory unions" employing 68 superintendents and assistant superintendents. Child-labor certificates are issued by the local superintendents of schools, in practically all cases. The law permits the school board to appoint a special officer for this purpose. This is done in one city. The local attendance officer or, as he is still called in our State, truant officer, enforces the attendance laws. He is also responsible under the local school board for inspection and the enforcement of child labor laws. The State board of education has authority to remove any truant officer who fails to enforce the child labor laws. All immigrant children coming to New Hampshire are reported to the State board of education and their attendance and employment accounted for.

The inspectors of the State board of education inspect all establishments included under the provisions of the child labor law, once, twice, or three times a year, the number of inspections varying with the size of the town and the number of children employed. One of these inspections is made during the summer vacation.

These inspectors also examine and certify to the correctness of the records of the certificating officers in the districts. If it is found that certificates have been issued upon inadequate evidence, or otherwise improperly, they are revoked. In general the records of the certificating officers are satisfactory.

A careful study of complaints of hardship caused by the child labor law was made during the first years that it was on the statute books. In very few cases was it found that the employment of the children was actually necessary. New Hampshire has a mothers' aid law under which mothers with families dependent upon them for support may receive aid in amounts not exceeding \$10 a month for

the first child and \$5 for each additional child. A majority of the "hardship" cases showed headstrong children or selfish parents.

The weakest point in our child labor law enforcement is our physical examination. No provision is made by the law for meeting the expense of this examination, and in many districts a fee is charged. In a majority of districts, however, the examination is made by the local health officer or a physician appointed by the school board. The scope of the examination is less than that recommended by the Children's Bureau. Our law requires a certificate from a medical officer of the board of health or from a physician designated by the school board certifying that "the child has reached the normal development of a child of his age, and that he is in sufficiently sound health and physically able to perform the work which he intends to do." I believe the adoption of a uniform standard for physical examinations to be of great advantage.

GEORGE R. STURGES, *Director of Attendance and Employment, State Board of Education, Connecticut.* The officers administering the Connecticut child labor law (except for the provisions relating to dangerous occupations and to hours of labor) are officers of the State board of education, and the State director of attendance and employment is also counsel for the State board. The board appoints several deputies or district agents, who do the work of certificate issuing and inspecting. They have offices in different cities located so as to be accessible to the districts under their charge.

A child who wishes to go to work must bring to the agent of the board proof that he has fulfilled the requirements of the law, his application for an employment certificate must be approved by the principal or school superintendent or some person designated by such officer, and he must then pass a physical examination. The examining physicians in the several towns in the State are appointed by the State board of education and are responsible to that board for the examinations they make. The certificates are issued in triplicate; one copy is delivered to the parent and may be accepted by the employer as a temporary permit good for one week, another is made out to the particular employer and sent to him, and the third must be filed immediately in the office of the State board of education at Hartford.

As soon as the child commences work, the employer must file a certificate with the State board of education stating that the child has commenced his term of employment. When the child leaves or is discharged, the employer must immediately notify the board that the child has terminated his services. If those notices do not come in, our follow-up system begins to operate and investigations are

immediately started to find out whether the child is at work, for he must be either at work or in school. In order to do this follow-up work these same officers are charged with factory inspection, as well as the State factory inspectors, and continuous factory inspection is something that the local officer must make in connection with his work, so that he may know where his children are.

The law permits the State director of attendance and employment to prosecute in person or by attorney for any violation of the school or employment laws, and for that purpose he has the same power as every prosecuting officer in the State—grand jurors in the smaller towns and the prosecuting attorneys of the several cities—so that for any violation of the statute in connection with children he may go directly into the town and prosecute in his own name.

The State supervisors and other school officials report violations of the attendance laws to the local truant or school-attendance officers. Under our statute each town may appoint its own attendance officers. Where they are appointed, it is the policy of our department to work in hearty cooperation with them and to hold up their hands in every possible way. In any event the matter is taken up through the follow-up system, so if the local officers have not functioned the State officers will. Where the local machinery fails, the State board of education steps in and carries the work on just as though the local officers had not been appointed, bringing the prosecutions over their heads.

It might be interesting to note that a State survey which we have had in progress for the past three years and which has covered 157 towns indicates that the percentage of school attendance for the entire State is 97 for children between the ages of 4 and 16, eliminating those between 4 and 7 who are not obliged by statute to go to school and those between 14 and 16 who have completed the sixth grade and are legally employed.

ROBERT O. SMALL, *Director, Division of Vocational Education, State Department of Education, Massachusetts.* As the preceding speakers have told of their State systems I have been impressed with the fact that in some ways we in Massachusetts have probably more system and in others less than all of them combined. We have no centralized system, such as has been described, which brings the State into the intimate relation of inspecting the issuing of certificates. For issuing certificates we have in the State 354 systems, all local. On the inspection side, however, the visiting of the factories, we have a centralized system in the department of labor and industries.

I do not know that I have any decided opinion on the value of leaving to local communities entirely the system of issuing. I presume I am rather typical of school men in this State in feeling that

the State can function best and most by helping to enforce school attendance rather than by taking over as a function the absolute control of and inspection of the issuance of certificates. I do not see how in this Commonwealth, with 45,000 youths employed between the ages of 14 and 16, representing something like 160,000 different certificates, we could profitably engage in that enterprise. I do not see how we can advantageously undertake the control and direction of and have knowledge about all of those certificates at the state-house. Personally, I prefer to get a picture of the procedure which should prevail in these different municipalities and then try to get results through cooperation with the 354 different units rather than to try to get results through one State unit. But I am just thinking out loud; I am not taking issue in any way whatsoever with the previous speakers. All in all, my acute interest in the matter is of such relatively recent origin and comes from such a different angle that I confess I know very little about the machinery for accomplishing the ends discussed.

My interest in the matter has come about through responsibility for enforcing the continuation school law, and the machinery which has been devised for this purpose without concern, so far as we are conscious of it at the outset, with the certificating side of child-employment legislation. The machinery which has been devised to apprise the continuation school that John Jones or Mary Smith has left the regular school to go to work is automatic. The continuation school thereby gets immediately in touch with the employed minor. Because of follow-up and informational matter which it thus gets automatically in the conduct of the school my acute interest started. If I have anything that I would like to submit as a possible contribution here to-day, it is my conviction that through the agency of the 47 continuation schools which we have in 47 municipalities in this Commonwealth, and through the cooperation of the principals of these schools with the attendance officers, we can do a tremendously more important piece of work in the certificating of minors than by centralizing all this work in any State office.

I do not disparage in the least the benefits which may come from some larger authority in this work. One benefit is in regard to the problem of differing interpretations of the statute. As I see the problem in this State, the great value of the suggestions already given is found in the State affording a common interpretation of the law rather than in the physical handling and inspection of certification. I have had the pleasure of meeting in the last year practically all the attendance officers in the larger places of this Commonwealth, and I know that there is a feeling among them that if we at the State office can get the authority to help hold up their

hands and give a common interpretation to the law it will be of great benefit.

One other point which should be emphasized is the dignity and the worth and the importance of the permit officer. I was much pleased to hear in Mr. Frye's paper the statement that they felt the success of the law was due to the caliber of the men and women who were in the permit-issuing offices. I feel that in this Commonwealth we must dignify the position of attendance officer. We need a very great amount of interpretation of the functions of the attendance officer's position.

I believe that I, myself, have come only within the last few years to realize that in last analysis all labor legislation enacted for the benefit of children in this Commonwealth seems to have been enacted to assure them of a minimum amount of school privilege and then to see to it that they get it. Of course, there are some other reasons, such as protection of health, but the fundamental reason is the educational one. It has dawned upon me only recently, but as I see it the most important function of all child labor legislation is to assure to the child his proper amount of educational opportunity. The other things come with the proper enforcement of this provision, and I believe that through the part-time schools we are going to secure in every community where they are established the agency which, through cooperation with all others, will be most potent to bring this about.

ETHEL M. JOHNSON, *Assistant Commissioner, Department of Labor and Industries, Boston, Mass.* I should like to add this one word to what Mr. Small has said regarding the problem of employment certificates in Massachusetts. I think the big problem is to secure more cooperation among the various agencies responsible for the work and better understanding of the work and the procedure in issuing certificates. We have, I think, encouraging cooperation here as it is—the school-attendance officers are very friendly in reporting violations that come to their attention—but there is need for more.

As you know, in Massachusetts the department of labor is responsible for enforcing the child labor law and seeing that children are not employed without working certificates, and that employment certificates are correctly made out. When errors are found they are taken up with the school officials responsible and the correct procedure explained. A good deal of educational work of this nature is performed by the department through its inspectors. The department has in preparation a handbook for issuing officers on the procedure in issuing employment and educational certificates and badges for street trades. Some time ago the department published a bulletin on "Conserving Children in the Industries of Massachusetts." Through the cooperation of the department of education

this has been introduced into the continuation-school courses throughout the State.

One of the most promising plans for further cooperation and for better understanding of this subject of certification of children for employment is that proposed by Mr. Small for an advisory committee made up of school superintendents and attendance officers. This committee, working with representatives from the department of education and the department of labor and industries, will try to devise a better system of procedure for the issuance of employment certificates, and a more general understanding of the law.

The CHAIRMAN. There is authority in many of the State laws for more State supervision than is exercised. Either the State commissioner or superintendent of education, or the factory inspection department might do a great deal in encouraging the development of good standards.

The important thing to remember is that almost anyone issuing certificates would like to make a good job of it. It is a detailed administrative job, and some one has to show some interest in it or it will be neglected. There should be in the office of the State superintendent and the State factory inspector a concerted effort to help the local officials to do their job. Wherever the blame rests for present neglect, the penalty falls on the children. It is therefore of great importance that we develop, not any one particular system but a good working system, in every town in the State, so that no child will go to work without a proper working permit or before he has had the educational benefits which the law is supposed to insure him.

You can not accomplish this end without some centralization of interest and leadership. At present we are drifting along with communities which are backward and do not know that they are backward. They can be brought to see that they are doing a very slovenly job, and in such a way that it will be possible to secure their cooperation in improving their own standards.

Mr. A. L. URICK, *Commissioner, State Bureau of Labor Statistics, Iowa*. I would like to ask the representative of Connecticut a question with reference to his statement that the factory inspectors made inspection of their plants, as well as the school officials. Does he mean by this that the inspections made by school officials are relative simply to child labor?

Mr. STURGES. The Connecticut State Board of Education is not concerned with the ordinary duties of the factory inspector except as the inspection may affect the children. For instance, if our local labor-department inspector in inspecting a factory ascertains that said factory is not provided with suitable sanitary equipment, etc., our office will no longer issue certificates to that particular factory. If we ascertain that the factory does not have proper fire escapes

the same would hold true, and the factory inspectors would be notified of that fact; but we would have no right to enforce that law. We might call it to the attention of the proprietor, but that is not a function of our agency.

Mr. URICK. If you found a child employed at a dangerous machine could you take him out?

Mr. STURGES. Yes; and as a further result of that violation, unless we were satisfied that it was purely an oversight, that particular factory would receive no further children from our office. The granting of a certificate is entirely discretionary on the part of the issuing officer. If he doesn't want to issue a certificate he doesn't need to do it.

Mr. URICK. I would like to ask Mr. Frye whether his experience with the judiciary has been satisfactory?

Mr. FRYE. I would say it has been just as satisfactory as with any other class. We have found the judges just about as willing to do the work and just about as satisfactory as the school people. I wouldn't want to say they are any better; they are just as good. Not long ago, in a city of considerable size, we had to dispense with the services of a superintendent of schools. We put a judge in his place. This superintendent lacked vision and he did not learn. On one occasion he insisted on putting a 13-year-old girl to work in a restaurant in violation of both the statutes and the regulations of the commission. We have, perhaps, among the judges, secured the services of the most competent, and as I said in my paper, if they will not learn we dispense with their services. We tell them we understood that they are very busy—too busy to do the permit work—and soon we have others in their places.

I can not see how it is possible for a permit officer to do his work well without information regarding the character, conduct, business, and policies of the people who purpose to employ children. A child 15 years old, for example, completes the eighth grade and applies for a work certificate. He is in perfect health. All right, he goes to work. If you stop there, however, he may be put out or exploited. If his work takes him onto the streets, he may be crushed in the traffic and his employer may not find it necessary—under the law—to gather up his broken body. If you stop with the issuing of the certificate, he may be put to work day and night.

The child labor law means much more than that the child shall have his opportunity to work. It means that he shall have an opportunity to grow to adult life with an unstunted body and a trained mind.

We put into the hands of the employers of the State the plainest kind of statement as to the hours and conditions of employment of children.

It is one of the duties of the factory inspectors especially charged with the enforcement of laws relating to women and children to visit the permit officers and to discuss with them the local situation with reference to child labor. They check over the records of the permit officer and assist him with the work. Permit officers, like the rest of us, tend to follow the line of least resistance. It is easier to comply with a request for a permit than it is to refuse it. Since March 11, 1918, no girl under 17 years of age has been permitted to work in a hotel in the State of Wisconsin on a labor permit, under a ruling of the industrial board. Does a proprietor of a hotel ask for a permit for a girl to work in his establishment? His request is quite likely to be granted, but as soon as the copy of the permit reaches Madison the permit is recalled. We do not try to distinguish between good and bad hotels. We recognize that the proprietors of hotels are just as good as the rest of us; but all hotels are bad in one respect, namely, that they can not control the actions of their patrons, and we find it necessary continually to brace up our permit officers in the refusal of such permits. Sometimes the permit officer advises that "this is a first-class bowling alley" or that "that is a fine restaurant for the employment of this child." We find it necessary to work continually with the permit officers to uphold standards.

Shall we issue permits to children to work for violators of the law? How is a permit officer to know whether he is doing that thing or not if the results of the factory inspection department are not available? For myself, I can not get away from the idea—after more than 10 years of experience in this work—that one of the most important factors in it is to see to it that the child gets a square deal after he gets that permit. Surely it is as important that he get a square deal after as before he gets a permit. We depend upon the schools to help us make sure that he gets a square deal before he gets a permit, so far as his education is concerned. We are working in close cooperation with the schools. We are not sidetracking them. In the performance of our permit work, we reach out with one hand to the schools for all the help and information that they can give us, and with the other to the factory inspection department for all the help and information that it can give us.

MR. URICK. I wish to ask Mr. Lederle a question. In issuing permits because of financial necessity, what evidence is required that there is financial necessity at home?

MR. LEDERLE. We work it out in this way: We record the income as received by the family, and in a parallel column the cost of maintaining that family, based on the same budget requirements as the mothers' pension and the public relief fund. This budget is worked out in Detroit by the visiting housekeepers' association. If the income fails to balance the minimum requirements for living in the

city at that particular time, one of two things is done—either some adjustment is made by the attendance officer to increase the family income, or the family is assisted in making plans that will permit them to live within the income received.

Mr. URICK. May I ask who makes the investigation with reference to this budget to see whether it is necessary for the child to go to work?

Mr. LEDERLE. That is done by the attendance officers. We keep a record of the work done by our department with every child in the city. We find that in most of the cases children who apply for permits have had constant contact with the attendance officer for some time previous. He knows the family before the child ever asks for a permit. Our present program contemplates that a child should never come to the central office until the officer decides definitely that the child should have a permit. The Detroit schools are organized on the 6-3-3 plan. We have a full-time attendance officer in every high school and intermediate school. If we keep our children in school until 16, most of them will be through the ninth grade. This means that the children applying for permits will come from high schools or intermediate schools. The attendance officer will have ample opportunity to consider their cases.

SECOND SESSION—JULY 6.

PART III.

METHODS OF ENFORCING STANDARDS OF EMPLOYMENT-CERTIFICATE ISSUANCE.

Chairman: MRS. MARY D. BRADFORD, *Chairman, Advisory Committee of School Superintendents appointed by the National Education Association.*

Mrs. BRADFORD. The program for this afternoon promises practical helpfulness to all those who deal in any way with the problem of the child in industry. Superintendents of public schools should find it of especial interest. It presents, as you see, four aspects of the general question of methods of enforcing standards of employment-certificate issuance.

Standards, here as elsewhere, are of prime importance. Mathematicians point out to us that advancing civilization has at each stage of its progress been characterized by increasing accuracy in the units of quantitative measurement used, and that therefore we may judge the general level of advancement of a people by the accuracy of these standards. So in its social relations and obligations we may determine the plane of advancement reached by any community by the standards it has set up and by the efforts made to bring these social interests up to the standards adopted.

The greatest of all the social problems is how to conserve child life. Definite progress in the solution of this problem is shown in raising the minimum standard of educational attainment for children, by fixing a standard for determining physical fitness of those entering upon industrial life, and by other defensive measures for the benefit of child-citizens.

The degree of success in enforcing these accepted standards varies widely in different communities. Those who have worked out successful ways of enforcing right standards are called upon to do others the valuable service of telling how it was done. We are here for the interchange of experience.

THE ENFORCEMENT OF AN AGE STANDARD.

ESTHER LEE RIDER, *Chief Inspector, Child Labor Division, Alabama Child Welfare Department.*

Alabama is not in the birth-registration area, and the enforcement of an age standard in a State which is not in the birth-registration area has many difficulties. The Alabama child labor law, which is enforced by the State child welfare department, prohibits the employment of any child under 14 years of age in any occupation except agriculture or domestic service when the public schools are in session, restricts the working hours of children under 16 to 8 hours a day and to the hours between 6 a. m. and 7 p. m., and limits their employment to occupations not considered dangerous to the life, limb, or morals of the child. It also requires every child under 16 years of age who goes to work to have an employment certificate issued according to certain requirements.

One of these requirements is, of course, evidence of age. The law definitely outlines the kinds of evidence of age that may be accepted. These are, in the order of their acceptability: (1) A duly attested birth record. (2) A duly attested transcript of certificate of baptism showing date of birth and place of baptism of child. (3) A life-insurance policy in force at least one year. (4) A bona fide contemporary Bible record of birth. (5) A passport or certificate of arrival in the United States showing the age of the child. (6) An affidavit of age sworn to by the parent and accompanied by a certificate of physical age signed by a public-school or public-health physician.

Employment certificates are issued by the superintendents of schools or their authorized agents. In all cities where there are regular school-attendance officers, the superintendents of schools have been requested to authorize these officers to issue certificates. These officials do not always take the time to require the proper evidence, and often accept whatever evidence a child may bring on his first visit; for instance, if the child brings a life-insurance policy the issuing officer may accept it rather than take the time and trouble to have him sent away for his birth certificate. Also, there has been much difficulty in preventing the issuing officers from accepting Bible records of birth which are not contemporary and which show erasures or changes.

We find sometimes that even the parent's affidavit is accepted by the issuing officer in lieu of other evidence which the parent may possess but which he failed to bring when the first application was made for a certificate. To defeat this practice we made the requirement, when we last revised our instructions for issuing certificates, that in case a parent failed to produce documentary evidence of age a

certificate must not be issued on a parent's affidavit until 10 days after the first application. This often brings to light evidence which otherwise would not be produced. If the child is actually under 14 years of age at the time of the application, parents who have brought no documentary evidence in many cases become suspicious when told by the issuing officer that it will take 10 days to investigate the age of the child, and never return to make affidavit. If there is really no acceptable evidence of age in existence, a certificate of physical age signed by a public-health or school physician must accompany the parent's affidavit. The standards of height and weight used are those established by the Children's Bureau for use in connection with the issuance of Federal age certificates under the Federal child-labor law. Although we know that these standards of measurements are correct for the majority of normal children, yet we come in contact with many exceptions of children large for their age who are able to meet the requirements for 14 when they are a year or so younger. As a consequence, the State child-labor inspectors accept certificates issued on parents' affidavits and physicians' statements of age with a degree of uncertainty.

Birth registration has been in force in Alabama for 25 years, but was not under State supervision until 1908. Few birth records are available for children now applying for certificates, except in the city of Mobile, where there are very good birth records dating back several years even before State supervision. Very few children in Alabama are baptized in infancy, so that few are able to present evidence of age based on baptismal records. There are practically no children of foreign birth in the State of Alabama, so that few can furnish passports or certificates of arrival.

Last year, of the 1,600 children under 16 years of age to whom certificates were issued, only 6 per cent were able to furnish birth certificates, 1 per cent offered baptismal certificates, 27 per cent furnished Bible records, and 32 per cent brought insurance policies as evidence of age. The remaining 34 per cent of the certificates were issued on parents' affidavits and school records accompanied by certificates of physical age. If it were not for the fact that the State child-labor inspectors make careful and thorough investigations of the ages of all children whom they find employed, this would mean that the legality of the ages of a little more than one-third of all the children who enter employment yearly in Alabama depends to a large extent upon the veracity of the parents. But by this work of the inspectors, the correct ages of many of those children who have not presented acceptable evidence of age on which to issue certificates are established; and if a child is found to be under the legal age, his certificate is revoked regardless of whether or not the evidence found by the inspector would be accept-

able as evidence on which to issue a certificate. Consequently it seldom happens that a child under the legal working age is able to escape detection for longer than a few weeks after he enters employment.

This same method is used in checking up the ages of those children who enter employment claiming to be 16 years of age or over. Formerly children under 16 years of age were frequently found working more than the legal hours or at prohibited occupations. The employers would state that they had employed the children in good faith, only after the parents had assured them that the children were 16 or over, and in many of these cases the employers were honest. To offset this difficulty the department prepared an age certificate for children 16 years of age or over, to be issued according to the same procedure used in issuing a regular employment certificate. The employer must keep this certificate on file for all children claiming to be 16 or over or else assume the responsibility for the correct ages of such children, and be liable to prosecution in cases of children found to be under that age and illegally employed.

It has been the chief goal of the child-labor inspectors in Alabama to supervise the work of issuing certificates so closely as to unify the system and bring the work up to the standards prescribed by the State child labor law and amplified by the officials of the State child welfare department. We have tried to keep this one important fact before the issuing officers, that inaccurate and careless certification not only may defeat the very intent and purpose of the law but also may aid in covering and encouraging violations. The work of the issuing officer is checked frequently by the State child-labor inspectors. All evidence and other papers required in the issuance of certificates are filed numerically in individual jacket envelopes in the office of the issuing officer. The State child-labor inspector visits the issuing office periodically and examines the papers filed for all certificates issued since the last visit was made. If any discrepancies are found in the filing of the necessary papers or in the description of the evidence on which the certificates were issued, these certificates are canceled and the issuing officer requested to reissue them correctly. All records are marked "correct" or "incorrect" by the inspector. In this way many irregularities have been discovered and remedied.

In making routine inspections, the inspectors check all certificates found in the possession of the employers. The inspector makes his round of inspection, questioning each child found employed concerning his correct age and what documentary evidence of age he may have at home. Then a visit is made to the home of the child to examine this

evidence or any other paper which may establish his correct age. If no documentary evidence of age is found at the home, any clue to evidence such as the name of the attending physician, the ages of subsequent children, the place and date of marriage, if the child was the first born, the schools attended, and many other such clues, are followed up by the inspector. Often parents will confess that the child is younger than has been stated on the affidavit when it is found that the inspectors, through investigation, are likely to discover the correct age.

When a better type of evidence is found than that on which the certificate is issued, the certificate is canceled by the inspector and withdrawn from the establishment, and a notice of cancellation left in its place. The canceled certificate is returned to the issuing officer, with instructions to reissue on the new evidence which the inspector has found. If the child is proved to be under age, the certificate is canceled and returned with a statement of the evidence.

Even with the handicap of few or no birth records, which makes much additional work for the inspectors, we have been reasonably successful in enforcing an age standard in Alabama. If persistence is used, it is astonishing how often something can be found which will prove the correct age of a child whose parents insist that there is not one single bit of evidence in existence. Personally, I have found a very small number of children whose ages I was entirely unable to establish. To this end I have visited attending physicians and searched their books for records of obstetrical cases; I have visited probate courts and found marriage licenses which would prove that if Johnnie was born in the year given by his parents he was certainly born out of wedlock, which revelation has usually brought a satisfactory confession of the correct age from the parents; I have searched for photographs of children taken in infancy which had been presented to some friend or relative, with the children's names and ages written on the backs; I have examined baby cups engraved with names and dates of birth of children; and I recall once having traveled 50 miles to visit a cemetery to read the date of death given on the tombstone of a certain deceased husband whose widow stated that he had died six months before the birth of her child. Only a few weeks ago I found a very young-looking boy working in a cotton mill, who held an age certificate issued on a parent's affidavit, and giving his age as 16 years. When I visited the mother she said that she had no evidence of his age. I visited the attending physician, but found that he had no record of the case. When I visited the mother again I asked her how she was able to remember the date of her son's birth, as she had kept no record of it. She said that he was born on Sunday, and that that morning a

cyclone had blown away a barn which belonged to a neighbor, who was at church at that time, and that the church service had been dismissed on account of the storm. I called on the owner of the barn which had been blown away, but he could not remember the exact year of the storm. Next, I visited the clerk of the church and asked to examine the minutes to see if any record had been made concerning the dismissing of services on a certain occasion on account of a storm. I found that such a record had been made in August, 1906. This proved the boy to be under 16, and therefore not entitled to work more than eight hours a day.

Bearing in mind such experiences I have the following as a motto: That where plenty of diligence is used there is usually a way to find out a child's correct age, despite the fact that there are few birth records for the children who are now entering employment in Alabama.

DISCUSSION.

MR. EDWARD B. SPERRY, *Chief Attendance Officer, Board of Education, Jersey City, N. J.* In New Jersey the applicant for an age and schooling certificate must produce one of the following proofs of age, in the order named: A birth certificate issued by a registrar of vital statistics; a baptismal certificate; a passport (if of foreign birth); or such other documentary evidence of age as may meet the approval of the supervisor of exemption certificates.

In many places it is difficult to obtain a birth certificate. The records of vital statistics have been kept fairly thoroughly in Jersey City in later years, but previously errors and omissions sometimes occurred.

A child applying to the registrar of vital statistics for a birth certificate, if his birth has not been recorded, is given a letter to that effect, also a blank form to be filled in by the physician or midwife who attended the mother at his birth. When this certificate giving the required data is presented to the registrar, it is recorded and a birth certificate issued to the child.

One of the parents must make an affidavit as to the truth of the statements contained in the birth certificate or other proof of age.

If none of the documentary proofs of age previously mentioned can be obtained, the supervisor of exemption certificates may take the affidavit of the parent as to the date and place of birth of the child. This affidavit, supplemented by a certificate of a medical inspector employed by the board of education that the child has the physical development of a normal child 14 years of age, may be accepted as evidence of age.

The New Jersey law requires that a copy of the age and schooling certificate, together with the documentary evidence of age, be mailed to the commissioner of labor for his approval.

The office of the commissioner of labor is in the statehouse at Trenton, where are also the State records of vital statistics and the records of the immigration department, both easily accessible for comparison should he question any evidence of age submitted for his approval.

I do not believe that any scheme has been devised that the human mind can not circumvent. This belief seems to be held by many parents and children, judging from the amount of falsifying and subterfuge indulged in by those attempting to gain that to which they are not legally entitled. The altering of the year on a birth certificate to make the age appear greater is a common practice, with which you are all familiar. There is a practice among the Italians of giving the Christian name of a deceased child to his successor if of the same sex. The attempt is made, frequently successfully, of submitting the birth certificate of the deceased child as evidence of age for his successor. Our knowledge of the family history, or information furnished by neighbors, acquaintances, and sometimes relatives of the family, has in certain cases enabled us to avert such attempts at imposture. When documentary evidence of age can not be obtained and the affidavit of the parent is taken as to a child's age, many times we are morally certain that perjury is being committed, but it is very difficult of proof.

While many excellent plans for the welfare of children have been put into operation, none will prove satisfactory unless a sufficient number of well-qualified officers are employed to execute them. An ideal attendance officer will be the friend, aid, and counselor of his constituents. When he reaches that standing he will be the recipient of warnings and of information that may prove of great assistance in the performance of his duties.

MISS ETHEL M. JOHNSON. We have several problems here in Massachusetts in connection with establishing proof of the age of working children. One of these is that although the Massachusetts law, in common with the laws of most of the other States, requires as the evidence of age upon which an employment certificate may be issued a birth certificate, a baptismal certificate, a passport, or other official or religious record, it permits the acceptance, where these are not available, of the record of the school which the child first attended in the Commonwealth, without corroborative evidence. In other States, when the school record is accepted additional evidence is usually required, such as a physician's certificate. It has been found to be very unsatisfactory to accept the school record alone as evidence of age, as this record is not always correct. In

some cases the date of birth has been set back so that the child appears older than he really is, and in others it has been set forward.

An effort to strengthen this provision of the law has been made by trying to secure an amendment providing that where the school record is the only available evidence it must be accompanied by a signed statement from the school physician who has examined the child to the effect that in his opinion the child is at least 14 years of age. The present law authorizes accepting the certificate from the school physician when all other forms of evidence, including the school record, are not available. The proposal referred to would therefore combine these two existing forms of evidence. This provision was included as part of a measure intended to establish a more satisfactory system of health certification of children entering industry.

Another problem which we have and one that is found, I think in other States, is establishing proof of age of working children over 16. We require employment certificates and consequently proof of age for all children 14 to 16 years of age who are gainfully employed. We require educational certificates for children 16 to 21 years of age in certain specified occupations. For the children in these occupations, therefore, definite evidence of age is available. Certificates are not required, however, for all the occupations in which minors of this age are employed. They are not required for farm labor or for domestic service. They are not required for all the occupations in which the employment of minors under 18 is restricted.

Under the Massachusetts law the employment of minors under 18 is prohibited in occupations where there is a serious health or safety or moral hazard. Where certificates are not required it is difficult to ascertain the age of minors employed in these occupations in order to determine whether the law is being obeyed. Sometimes a boy who is husky looking and large for his age will claim that he is 18 when he applies for work, although in reality he is only 17. If he is employed at a prohibited process, proof must be established that he is under 18 before action can be taken by the labor department.

If there were some provision for recording the ages of all children who are employed in restricted occupations, it would be of great assistance. I should be interested in hearing from people in other States who have had experience with these problems.

[An inquiry was made by an unidentified speaker with regard to whether effort was being made anywhere to have the child's age established when he first entered school.]

Miss CAMPBELL. In Ohio, Akron is requiring a birth certificate on the child's entrance into school. The cumulative record card in Cincinnati is a similar attempt.

MISS SUSAN GINN, *Director, Boston Placement Bureau*. In Boston they are requiring it. In 1910, the school committee made a ruling to the effect that a child must produce a birth certificate upon entrance to school. In 1911, the city registrar received the indorsement of the school committee in his plan to publish, in book form, a list of all children born in Boston during that year. A copy of this book was sent to each school, and to the certificating office and to the department of vocational guidance. These books have been published continuously to 1918, so that children now entering the kindergarten or elementary schools are listed in these books, and the school authorities accept this listing in place of the birth certificate. This prevents the delay due to the rush at the city registrar's office at either the beginning or the close of the school year. Children born outside of Boston must still produce their birth certificates. A State law requires every physician or hospital medical officer to report the birth of every child in cases of which he has charge. This must be done within 48 hours after such birth. Any physician or such officer violating any provision of the section above referred to shall forfeit not more than \$25.

MISS MINOR. New York has been doing that for seven years now, requiring the birth certificate if one is on file; if not, some other evidence. We are finding it of great value. I would like to emphasize also the advantage of penalizing with large fines the physicians who fail to record births. It was found in New York City some years ago that the percentage of unrecorded births was very, very high, and a campaign was made by the department of health against all men in the profession who failed to register births. The registration is now very high.

SARA S. GARWICK, *Employment Certificate Issuing Officer, Springfield, Ill.* The State of Illinois has not been admitted to the birth-registration area.¹ The doctors in Springfield now are more careful about registering births than formerly. This year we took a school census from birth to 21 years of age and expect to check the births of children under 5 years with the records of the city registrar. In this way we hope to eliminate some of our birth-record problems. The State of Illinois is issuing certificates of registration of birth for children born since January 1, 1922. Our enumerators took a sample certificate, and in homes where babies had been born since January 1 explained to the mother that if the baby's birth had been registered she should have one of these certificates. We have been issuing "letters of age" for children 16 years of age and over, and have been trying to get the business firms and factories to cooperate with us. A number of them will not employ minors unless they have a birth

¹ Illinois has since been admitted to the United States birth-registration area.

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certificate or a "letter of age" from this department. One factory which employs a large number of persons last December sent us about 40 proofs of age for minors in its employ. We found about 10 of this number to be incorrect records, and since that time the factory will not employ any minor without a letter from this department.

THE ENFORCEMENT OF AN EDUCATIONAL STANDARD.

JEANIE V. MINOR, *Acting Secretary, New York Child Labor Committee.*

Under the New York law there are three educational standards with which the official charged with the issuing of employment certificates has to deal: (1) A child must have completed the work of a prescribed grade, as evidenced by his school-record certificate; (2) he must have attended school a definite number of days during a limited period preceding his application for an employment certificate; and (3) he must satisfy the officer issuing the employment certificate of his ability to read and write correctly simple sentences in the English language.

The minimum standards adopted by the Federal Children's Bureau make the completion of the eighth grade or graduation from grammar school a requirement for release from school and the issuance of an employment certificate. This standard does not seem unreasonably high if one bears in mind that the usual legal minimum working age is 14 and that the average child graduates at approximately 14 years of age. Yet only 11 States—Indiana, Kansas, Minnesota, Montana, Nebraska, New York, Oregon, Utah, Vermont, Washington, and Wisconsin—have as yet adopted this standard; and one of these, New York, requires completion of the eighth grade only for 14-year-old children, permitting children of 15 to obtain certificates at the completion of the sixth grade.¹ Two States—California and Ohio—require the completion of the seventh grade; 9—Connecticut, Illinois, Iowa, Maine, Massachusetts, Michigan, Pennsylvania, Rhode Island, and West Virginia—the completion of the sixth; 5—Arizona, Delaware, Kentucky, Maryland, New Jersey—the completion of the fifth; 2—Alabama and Arkansas—the completion of the fourth; while 16 States are still without any requirement as to the completion of any grade whatever. The three remaining States, Idaho, Mississippi, and Wyoming, have not yet adopted the use of work permits.

When discussions concerning the further limitation of child labor are under way, the question always arises as to the relative desirability of accomplishing the end sought by raising the age limit or by increasing the educational qualifications. Both methods have their advantages and their difficulties, the most insuperable difficulty at present being the inability of the schools to house the chil-

¹ Nebraska, Utah, Washington, and Vermont permit exemptions.

dren who would by either method be held in school. But a physical obstacle of this nature can and will be overcome if public opinion and public purse combine, and the richest and most powerful country in the world can not afford to deny its children the advantages which make for citizenship.

The second educational standard, i. e., that the child must have attended a certain number of days at school during the year preceding his application for an employment certificate, is apparently recognized by only a few States. South Carolina requires regular attendance during the "current year"; Oklahoma, attendance for a "full term"; Arizona and Oregon, for 160 days; the District of Columbia, Illinois, Massachusetts, and New York, attendance for 130 days; North Dakota, attendance for 120 days; Michigan and Utah, 100 days; Georgia, 12 weeks; Florida, 60 days; New Hampshire, 300 half days.

In the 10-month school year the 130-days requirement which has been adopted by the greater number of States certainly can not be considered excessive; and if we consider the purpose of this particular requirement, namely, to insure regular attendance during a period of time when the child, being of working age, would otherwise probably be absent quite frequently in search of work, it can readily be seen that to oblige him to present a record showing regular attendance during a period immediately preceding his application for an employment certificate puts a premium on such attendance and is a distinct deterrent to truancy. New York gives alternative periods during which this 130 days may be included; the child must have attended 130 days either during the year preceding his fourteenth birthday or during the year preceding his application for an employment certificate, or 130 days preceding the date of his graduation. The third alternative period was added last year. This triplicate provision is not recommended, as it affords an opportunity for a child who has gone to school regularly for 130 days during the year preceding his fourteenth birthday to remain away entirely for the following year, and then at 15 years of age to present this record of attendance and obtain an employment certificate therewith. The most effective means of utilizing this requirement as a real preventive measure is to make the 130 days' attendance compulsory during the 12 months immediately preceding the child's application for an employment certificate.

We come now to the third and most controversial point of the educational requirements for employment certificates, namely, that provision which authorizes or requires the issuing officer to give a literacy test to the applicant and, as it is usually phrased, to certify that the child has personally appeared before him and been exam-

ined and is able to read and write correctly simple sentences in the English language. Eight States and one district have intrusted this power to the issuing officer: Delaware, District of Columbia, Indiana, Minnesota, Nebraska, New Hampshire, New York, North Dakota, and Utah.

This attempted check on illiteracy is generally regarded by school principals as totally unnecessary, as they consider the school-record certificate sufficient evidence of the fact that the child has completed the required school grade. This attitude on the part of the principals is not unreasonable, and would be warranted if the school-record certificate which evidences the attainment by John Smith of the sixth, seventh, or eighth grade, as the case may be, were really a guaranty that John had actually completed the work of the preceding grades. But is it? Consider the evil—apparently considered a necessary one—of forced promotions by means of which our friend John, having failed to complete the work of any grade, might yet in his fourteenth or fifteenth year lawfully become possessor of a school-record certificate which would contain a statement that John was at this time in the grade required for the issuance of an employment certificate. Or suppose that John, disorderly in school, frequently an absentee, effective in his relation to the class only by his persistence in lowering its record, desires to leave school to go to work—is the unfortunate teacher who has been burdened with John for at least a term likely to impede his exit, or will she wish him Godspeed and sign a school-record certificate crediting John with the work which, as a member of that class, he might reasonably have been expected to do—but did not do? No method of closing truancy cases is better known to or more widely followed by many attendance officers than the issuance of employment certificates. For these and for many other reasons the special check known as the literacy test seems advisable, and its results fully warrant its application.

In one year (1912), in the offices of the New York City Board of Health, 239 children were refused employment certificates because unable to write correctly the simplest English sentences. The following samples of sentences, actually dictated and misspelled as quoted, will serve to illustrate what may easily happen in any issuing office where this test is applied:

S. S.—There are lots of girls here.

“There are loind girl.”

This box is green.

“This lox is bring.”

J. G.—I have a black and white suit.

“I have a block shout.”

“I have a black and wite about.”

- L. C.—I have a pair of new shoes.
" I have a pair of noo shore."
H. G.—I have a gold ring.
" I have a glold reng."
J. S.—I would like to go to school.
" I would like to go to shool-scoohl."
Monday was a very warm day.
" Monday was a veair Worm day."
M. S.—I have a gold ring.
" i ave a gold reng."

The children whose misspelled sentences are given above include both native and foreign born. Most of the 239 children came from our public schools—a large minority from the parochial schools. The cases were piling up so rapidly that a conference between the issuing authorities and the city superintendent of schools resulted in weekly reference to the latter official of the names, ages, addresses, schools attended, and grades in school of all children refused during the preceding week for "insufficient education." On his part the city superintendent at once ordered a special examination given to all children who thereafter applied for school-record certificates. On receipt of the data concerning a child who had failed to pass the literacy test at the board of health, the city superintendent sent immediately to the principal of the school attended by the child, asking the nature of the examination given by the principal before issuing the school-record certificate, and the passing mark of the child. This was frequently accompanied by a request that the principal send in the examination paper. The practice was not extended to parochial schools. By degrees this procedure resulted in cutting down these refusals to an irreducible minimum so far as public-school children were concerned, and in 1914 only 16 children were refused for this cause. The type of examination outlined for this purpose was, moreover, a decided check on the deplorable system of pushing children rapidly through grades by means of special classes, maintained solely for the purpose of enabling groups of children, mostly the backward ones, to qualify more quickly for employment certificates. In these classes attention was focused solely on the absolute requirements for certification; and in some instances class teachers have based the spelling lessons on sentences known to be customarily used for the literacy test by the employment certificating officer.

To conclude: With respect to the grade requirements, the writer ventures to suggest that one method of controlling the evil of forced promotions is to have a record of each child's annual or semiannual examination forwarded to the central office, together with the passing mark of the child and any further information concerning the child's school work which the superintendent may

desire. By keeping these in sequence the superintendent of schools will have a continuous record of the child's grade work and may at his discretion require the child either to repeat grades or to be transferred to a course offering a more diversified curriculum, better suited to the real needs of the child than that in which he has shown marked disability. This record presupposes, of course, that every superintendent is looking forward to the time, or has already reached it, when he may be afforded the means to devise and install a curriculum which shall be flexible in character.

As to the requirement of a specific number of days' attendance immediately preceding the application for an employment certificate, the advantage of thus putting a premium on the regular attendance of a child is so obvious that no recommendation is necessary.

The requirement that the issuing officer be authorized to administer a literacy test which shall be broader in scope than a mere test of ability to read and write English correctly, is strongly recommended. Resulting as it did in New York in the plan of having every child, irrespective of the character of his school work, take a uniform examination if he desired to leave school and go to work, it has held hundreds of these children in school, as the examination brought out clearly the fact that the fundamental educational qualifications were in many cases distinctly lacking and that further training along specific lines was essential. It is, of course, obviously unnecessary to apply this test to graduates of the elementary school; but it should be applied to all others, and changed often enough to prevent the children from becoming thoroughly familiar with it and transmitting the information to other children about to apply for employment certificates. This has been done so often in New York that the warning is not a vain one, but founded on actual experience. One child, for instance, recited fluently 18 of the 20 sentences which had been in use by the issuing officer for a period of two weeks. The test is advocated not as a check on school officials, but as a measure further safeguarding the interests of the child and preventing him from entering industry so handicapped that he will inevitably be swept into the industrial maelstrom and eventually be drawn under.

When Thomas Jefferson said, "If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be," it was gospel truth; and James Buchanan rammed this truth home when he wrote that "Education lies at the very root of all our institutions; it is the foundation upon which alone they can repose in safety. 'Shall the people be educated?' is a question not of mere policy, but it is a question of life and death, upon which the existence of our present form of government depends."

DISCUSSION.

MR. JOHN A. PARKER, *Chief Attendance Officer, School Department, Springfield, Mass.* In Massachusetts there is a clause in the law which allows a superintendent of schools, in issuing an employment certificate, to waive the requirement of the school record whenever he thinks it will be for the best interest of the child to do so. This, of course, nullifies the educational requirement. There is another clause in the law which permits the issuing of a certificate to any child who has attended school for seven years, regardless of his grade, if the superintendent of schools is of the opinion that the child is unable to complete the sixth grade.

To keep children who will never be able to do the work of the sixth grade in a regular day school seems to me to be training them in the habit of failure. A child who never gets in school the incentive given by success is going to be a failure the rest of his life. Vocational schools established under the Smith-Hughes Act do not supply the need for the instruction of children who can not attain the completion of the sixth grade, since they receive only pupils who have completed the sixth grade. Special classes do not answer the need, because they do not have the proper equipment, the training is not sufficiently thorough, and being in the same buildings with the regular day schools the classrooms are dubbed "dunce rooms" by the other pupils, with a consequent feeling of failure and loss of self-respect by the children attending these classes.

Continuation schools, I think, have resulted partly through the work of attendance officers in forcing back into the regular day schools children who had been employed but who were out of work. These children did not fit into the system and were a nuisance. If all children were obliged to continue school attendance until they were 16 years of age, the schools in self-defense would have to adapt the curriculum to care for motor-minded children. The continuation schools have the equipment to help children already employed. Why should their usefulness not be extended to prepare children for employment?

THE ENFORCEMENT OF A PHYSICAL STANDARD.

DR. WADE WRIGHT, *Director, Industrial Clinic, Massachusetts General Hospital, and Consultant in Industrial Hygiene, Massachusetts Department of Labor and Industries.*

Children seeking employment certificates are, in most communities, supposed to satisfy certain requirements regarding age, education, and physical fitness. The age and educational attainments of children are usually matters of record. Evidence of physical fitness,

broadly speaking, must be sought at the time of certification if it is to be obtained.

In the greater number of certifying offices, though not in all, responsibility for the determination of the physical condition of applicants is placed upon physicians. While this delegation of authority by governmental agencies to persons medically trained commends itself as reasonable and wise, it is doubtful if evidence could be found to indicate that the judgment of laymen in matters pertaining to the physical state of children is in any important degree inferior to that of examining physicians as manifested in their achievements in this field throughout the country, except in a small number of certifying offices.

Many of the difficulties which beset the problem of medical certification of children for employment are traceable to a cause which is accountable for a host of other woes of society. It is the incomprehensible faculty of the public for considering almost any doctor an able doctor, for obscuring the frailties of the medical profession with a veil of mysticism, a garment so flattering that the doctors seemingly gladly bear with it. Men quick to anger over the shortcomings of an automobile service station are meekly tolerant of the incompetencies of their physicians. They forget that State registration confers upon a physician the right to practice medicine but does not endow him with wisdom.

The enforcement of standards of physical fitness is dependent primarily upon medical personnel and secondly upon the standards to be enforced. Unless it should be certain, in any State or municipality, that all or a large majority of the physicians in a community could be trusted to make a thorough examination and to interpret the findings intelligently and accurately, it is apparent that the examinations should be made by selected individuals. It is not practically possible to obtain universally trustworthy medical opinions under conditions such as prevail in Massachusetts, where a child applying for working papers may be examined by the physician of his choice. Neither is it practically possible to obtain even reasonably uniformly reliable opinions from all physicians who may be appointed as examiners unless they are obliged to conduct examinations according to established standards of procedure and under some central supervision.

The examination of supposedly healthy individuals is not so simple a task as may be imagined. Neither is it an undertaking which stirs the imagination of most physicians. Few doctors are interested in incipient disease and probably many are incapable of recognizing it, for it is not a matter of much concern to medical schools, and doctors' offices are visited by sick persons, rarely by those who consider themselves well.

If the purpose of various State laws through provisions relating to the physical qualifications of children seeking employment is to assess truly the physical conditions of children, without doubt medical examinations must be made by suitably qualified physicians appointed for the purpose. Quite as essential as the appointment of such examiners is provision for their proper compensation and, should the appointees be already public officials, consideration of the time required for the discharge of this additional duty. It is futile to expect that professional services of a high order will be rendered without suitable recompense, except under very unusual circumstances. It is equally futile to hope that busy school physicians or public-health officers can assume large new responsibilities without a portion or all of their work suffering.

Whenever possible, there should be appointed to examine children applying for employment certificates physicians who are interested in such work and who have had some definite training in this field. If specially trained men can not be obtained, there should be sought physicians of unquestionably high professional and ethical standards.

In certain States medical examiners are required to determine the physical fitness of applicants in relation to specific occupations. It is thus assumed that the examiner has some knowledge of many trade processes and of the demands they make on those engaged in them. It is possible for a physician practicing in a small industrial town to have some knowledge of most of the processes carried on in the local industrial establishments. In large industrial centers, and especially in those having varied industries, it is beyond the range of possibility that any physician should be sufficiently well acquainted with manufacturing processes to warrant invariable unconsidered acceptance of his opinion regarding the fitness of a child for a specific form of employment. Not only are there many kinds of jobs, but jobs of similar designation may differ greatly in different establishments, and with the job, the attendant health hazards.

Even within a single large establishment the forms of work are so numerous that many industrial physicians in well-conducted plant medical departments, men deeply concerned with selective placement of labor applicants, do not after physical examination recommend the employment of personnel for specified tasks. Upon the basis of physical examinations applicants are graded according to a code; A, for example, may be used to indicate persons of excellent condition, fit for any employment within the establishment; B, those with minor defects demanding some consideration in placement; C, those who must be carefully placed with regard for physical condition; and D, those rejected as unfit for employment at any work within the establishment.

Selective placement is urgently needed in industry, and it is to the common interest of the work and the worker. It should entail consideration of both physical and mental qualifications of the labor candidate in relation to the requirements of the prospective work. Selective placement, however, implies a study of the job at least as intensive as that of the man who is to have the job. While much has been accomplished in the field of work analysis, much remains undone. Numerous summarized job analyses present as requisites an imposing array of the cardinal virtues coupled with a few loose generalities regarding desirable physical characteristics. It may be that an errand boy in a factory should be intelligent, industrious, honest, and of ordinary muscular strength, but it may also be that he should be able to walk 15 miles a day, climb scores of flights of stairs, and carry certain weights, without collapse.

Though it is highly desirable that certifying physicians possess as exact information regarding industrial processes as may be possible, it must be remembered that an examiner is essentially a physician who can not have encyclopedic knowledge of industry.

A few certifying centers have established close working relations between the office of the medical examiners and that of a placement bureau. It is an admirable arrangement, if not the only one so far developed which can assure proper utilization in connection with the placement of children of the findings of physical examinations.

The standards of physical fitness set forth in various laws relating to certification for employment are for the most part the same in substance, if not in wording. Adjectives are notorious legal stumbling blocks, and some nouns are as troublesome. The individuals who drafted legislation requiring as prerequisite to certification a physician's statement that a child is of normal development, in sound health, and physically fit to engage in specified work prove well. It is regrettable that they did not supplement the drafts with precise definitions of normal development, sound health, and physical fitness. It may have been their intent that the phrase should be loosely interpreted, in which event the spirit of the law may be said truly to have descended now upon most of our certifying offices.

There is observable a tendency among many people to attach undue significance to a thorough physical examination. The making of a physical examination requires but a few minutes of a doctor's time, but the interpretation of his findings may call upon the support of centuries of medical experience. Reasonable uniformity of judgment is not possible unless the technique of examination and of weighing the significance of the observed facts is to some degree standardized.

The world would be a healthier, happier place if more people would periodically submit to a medical overhauling, but they should exercise some discrimination in selecting their physicians. It is not wise to act precipitately upon the advice of a physician whose standards of judgment are uncertain. Many a man has gone to his doctor, been examined, and then rushed out and bought an abandoned farm, or gone to Los Angeles, or committed suicide, or taken a trip to Europe, only to learn later that the doctor's dictum was but an opinion and that the opinion happened to be wrong.

A physical examination should be in keeping with the purpose which it is to serve. If a labor boss wished to move a heavy timber and of his gang he had available a big Lithuanian and a little Italian, he would probably conduct a hasty physical examination of the two without medical assistance and tell the Lithuanian to get under the timber. Economy of time and personnel require that the technique of the physical examination of children seeking working permits be no more elaborate than is necessary in consideration of the purpose for which the examination is made. It may be assumed that the immediate purpose of the legal requirements concerning medical certification is to exclude from the working world children incapable of engaging in the work of their choice and thus to offer opportunity for furthering the development and health of the physically subnormal. In general, the laws do not provide for discriminating placement or for benign coercion toward the correction of defects.

When a child presents himself as an applicant for an employment certificate any one of several things may happen. He may be granted a certificate conditionally or unconditionally, in which event he goes to work legally. He may be refused a certificate, in which event he may go to work illegally or return to school or loaf. He has only to wait out the brief period during which the question of his employment is a matter of concern to the State and may then enter industry with few administrative restrictions placed upon his activities. The children who apply for working papers are all of them going to work eventually, excepting only those with serious and rapidly progressive disease. The most that an examining physician can do for a subnormal child is wisely or unwisely to defer the day when the child may take his place, albeit a poor place, in the working world. This issue is not immediately concerned with that of the determination of a proper minimum age for leaving school, which is another story.

The reports of many certifying offices show that over half the children examined are sufficiently defective to be recorded as such and that about one-third of the total number examined pre of defects which are considered to warrant temporary or permanent refusal of certificates.

the opinion of the same man based upon the application of sound criteria.

Provisional standards of development exist and are widely used, in the main as points of departure. There is need of intensive research in the problem of the normal development of children from birth to full maturity. New standards will be forthcoming, more nearly absolute than those now available. They may rest upon consideration of age, height, and weight, or may ignore the age or be patterned after Dreyer's formula or Pirquet's pelidisi or be altogether different. Meanwhile such tables as those of Doctor Wood may serve a very useful purpose and should be employed. They do at least dignify the doctor's guess.

Soundness of health can be estimated only by weighing the probable importance of observed deviations from normality. There are few universally accepted conventions regarding normal limitations. A slight murmur which one physician interprets as significant of organic heart disease may be considered negligible by trained cardiologists. The significance of albuminuria, of minor degrees of scoliosis, of certain pulmonary findings, are all matters to be determined in accordance with the best medical practice.

There is a rapidly growing demand among examiners in certifying offices for standards of normal limits for physical findings. Until such standards appear the best gauge is the opinion of a well-trained physician. Even when good standards of normality become available they can not supplant careful physical examinations and sound medical judgments. They will be useful tools—they will not do the work.

No hospital or dispensary or private practitioner of medicine can do good work without medical records. Neither can reasonably thorough, systematic medical examination of applicants for employment certificates be carried on without records. They are essential for all comparative studies and to the conduct of efficient supervision. They should be as simple as may be consistent with their purpose. A detailed form such as that published by the Children's Bureau may be too elaborate for use in some offices restricted as to personnel, but much printing on a form may mean little writing. The central filing of copies of all examination records may greatly facilitate supervision, but it must be productive of needless labor and expense unless the supervising authorities are prepared to analyze intelligently the statistical data thus rendered available.

The effective enforcement of physical standards requires that applicants for employment certificates be examined by carefully selected physicians appointed for the purpose, working with proper compensation and with sufficient allowances of time.

The essential purpose of the examinations is to prevent the employment of substandard children at work which would probably prove detrimental to health. The incidental benefits of the examinations are found in the presentation of a last opportunity for the institution of educational and remedial measures, of a check upon the achievements of school and preschool medical work, and of a basis for an estimation of changes in the physical state of children during early working years.

Standards of procedure and limits of normality are required to assure reasonable uniformity of judgment throughout a State or the entire country.

Though an examining physician should be broadly informed regarding trade processes, it is suggested that final decisions concerning the placement of children in specific jobs should be the responsibility of persons more intimately acquainted with working conditions.

The study of this important phase of the public health is a relatively new thing. Physicians and laymen, working under adverse conditions, have accomplished much. Many medical certificating officers display a truly inspiring enthusiasm and interest in the medical and social problems there presented in such great numbers. The achievements of these officers can be matched by those of many more if State and municipal authorities will offer guidance and support.

DISCUSSION.

Dr. EMMA MACKAY APPEL, *Chief Medical Examiner, Employment Certificate Bureau, Chicago Board of Education*. Nearly everyone has emphasized the necessity of checking the legality of papers presented by children appearing for a working certificate. It has been our experience that it is often well to check up on children. I remember one little boy who failed to pass the physical examination and was very indignant. He substituted a friend who he thought would pass, and was equally furious when he discovered that the friend had been held for enlarged and infected tonsils.

In Doctor Wright's paper he emphasized the qualifications of examining physicians. This is most important. In the Chicago office we have found that the successful medical examiners develop the ability to check up their physical findings and observations quickly. It is essential that the examiners be well trained medically, be thoroughly competent diagnosticians, and have some knowledge of industrial conditions, but above all they must be sensitive to the social and economic environment of the child. They should have ability to classify children intelligently as to the type of work possible for each and they must be able to keep up their interest in

spite of the large number of children who present themselves for medical examination.

It is practically impossible for physicians to do accurate work unless they are in constant touch with the industrial situation and with the different types of jobs in which children are employed. We have one factory in Chicago where the work is altogether piecework. For some time the industrial studies division of our bureau, of which Miss Davis spoke yesterday, has been trying to have this establishment comply with the law and provide chairs for the workers. After a good deal of effort this was accomplished and children were again allowed to work there. Later it was found that the children were changing their jobs because the work was too hard. Another investigation was made, and it was found that although the children were provided with seats they could not use them and make any money, as standing was required in order to speed up the piecework, and only a child of more than ordinary strength was able to stand at this work all day. Because of this one child suffered a severe occupational neurosis and was obliged to give up work entirely.

In addition to the correction of physical defects, it is essential to follow up the child in industry with careful examination after each job. Our procedure in follow-up work may best be illustrated by the case of a boy who was originally refused a certificate because of malnutrition. He was sent by us to Arden Shore, our open-air school for boys, where he improved very much. On account of the poverty of his family he was allowed to go to work when he was in fairly good physical condition, though not up to normal. Shortly after this we had a spell of very hot weather during which he overworked. For two weeks he was unable to sleep at night and worked very hard all day, finally collapsing with a nervous condition that was not diagnosed by the family physician who was called in. He was ill at home under the care of this physician for two weeks, when he returned to our office. It was found that he had a well-marked case of chorea. He was in the hospital for six weeks, in the convalescent home for six weeks, and at Arden Shore for four months before he was again able to go to work. This is only one of the many instances of children who require more than just the preliminary examination to make them fit and keep them fit for their jobs.

THE ENFORCEMENT OF A "BEST INTERESTS" OR "NECESSITY" STANDARD.

DR. E. J. LICKLEY, *Assistant Superintendent of Schools and Director of Compulsory Attendance and Child Welfare Department, Los Angeles, Calif.*

Since the subject of the enforcement of a "necessity" requirement for going to work was brought out so well in Mr. Lederle's paper

yesterday, I should like to devote part of my time to touching upon some of the general phases of the child-labor problem in California. It differs from that of other States in several ways. First, we have very few factories. The two serious problems we have in the field of child labor are: First, agriculture; and second, children working in the production of motion pictures. The latter is a special condition that exists in southern California, and is a serious problem to those interested in the enforcement of the child labor laws.

In California children of any age may work in the production of motion pictures provided they secure permits. About 75 per cent of all the permits issued are issued for work in that one industry. It is the largest industry in point of investment in all the Southwest. The figures are stupendous. It represents a different problem to the child-welfare workers, for several reasons. In the first place, children go to work in motion pictures for reasons that are quite different for the most part from the reasons that are usually given for children going into industry. All the parents are obsessed with the idea that their children are all potential stars. That is the first and chief reason they want these children to go to work. Usually the mother or the father who wants the boy or girl to work in the production of motion pictures is governed by the tremendous idea that he has in his family a little Mary Pickford or a little Charley Chaplin or a little Douglas Fairbanks, and all that is necessary is that some kind-hearted official issue a permit in order that this undiscovered genius of the silver screen may not be lost to the general public. The juvenile stars of the motion-picture screen have almost all been given their first permits in the issuing office at Los Angeles. We have had such stars as Jackie Coogan, Wesley Barry, Mildred Harris, Mary Osborn (known as Little Mary Sunshine), and many others.

The second reason arises from the fact that so many of the children have fathers or mothers engaged in the industry and they are going to live in this motion-picture world, the children are going to grow up in it and that will be their occupation. So they say: "Our children are going to follow this line of work, why shouldn't they begin early? Why shouldn't they start in when they are children?" There is a tremendous demand, so the motion-picture people tell us, all over the country for juvenile pictures.

The third and the smallest group of parents is composed of those who want their children to work for the money it brings in to them; those who are not willing to work themselves but hope that their children may earn fabulous sums as motion-picture stars.

It is interesting to note that the very brightest children are the ones who do work in the production of motion pictures. There is no place for the dull boy or girl in this work. You can readily see that it requires brightness even on the part of the very small chil-

they go we let them shift for themselves. What an idiotic practice it is! We are willing to spend so much money on them while they are kept in school, and so little when they leave school.

We subscribe to the program and the ideals of the Children's Bureau. We expect not only to approximate those ideals but ultimately to reach them in the enforcement of the child labor laws in California.

DISCUSSION.

Miss MINOR. May I say with reference to the paper on physical standards that that has been a question very much at issue in New York City. There was a time when but 5 children out of 5,000 were refused certificates for incapacity. Then Dr. Josephine Baker took hold of the situation as head of the bureau of child hygiene. Since then refusals for physical incapacity have increased amazingly. Two years ago about 2,000 were refused outright and 5,000 or 6,000 had their papers withheld for remediable defects. Over 85 per cent of those children subsequently had those defects corrected and received employment certificates. The remainder of this number were turned over to the New York child labor committee for follow-up work and we cleared up all except 87 cases, showing that the defects are correctable and that these cases can be handled despite the protests of the parents, who claimed that the clinical facilities were insufficient and that the cost was too high. We found that the obstacle was very largely a desire on the part of the child to avoid the dentist's chair. The only safe thing to do is to certify a child as physically sound and able to do any work in which he may lawfully be employed.

Mr. W. M. DENISON, *Director, Bureau of Attendance, State Department of Public Instruction, Pennsylvania*. I was very much interested in the discussion this afternoon; especially was I struck by the statement made by Miss Minor that it was necessary to have a literacy test in order to determine the educational standards for employment certificates. It seems to me that the teachers of public schools should be honest enough and conscientious enough to be trusted in their promotion of children through the grades, and that a child who has completed the work of the grades specified and has the teacher's certificate to that effect ought to be able to read and write the English language intelligently and correctly.

If Miss Minor's statement is true, and I shall accept it as absolutely true, it seems to me it is an indictment of the teachers of New York State. If it is true in New York it is probably true in Pennsylvania. We are going to know, since you have raised the question.

Another point brought out was about the age standard. I believe that one of the speakers this afternoon said that in the State in which she lives the census enumeration was made to include all

children from 1 to 21. I believe that we should do this and that children should be required to present an accurate and authentic evidence of age when they enter school. Philadelphia this year is requiring every child that enters school to provide evidence of age at entrance to school.

The question of certificating children in rural communities in agricultural work has just been touched upon. Yet nothing has been definitely said about this subject this afternoon.

MISS CAMPBELL. Madam Chairman, may I express to the Children's Bureau my personal appreciation for calling these conferences, which have been of great practical value and of unusual interest. I am asking this appreciation to be indorsed by those here assembled as a group. May we not also present a request to the Children's Bureau that a similar conference be called each year at whatever time and place seems feasible to the bureau? Personally I should like to express my appreciation to the Children's Bureau for calling this meeting, and I should like to ask, if it is proper, that we present a resolution that we should again be called together.

MR. LEDERLE. I feel that I have received much benefit from this conference and that I owe a debt of gratitude to the bureau for calling the meeting. I offer a motion at the present time that the Children's Bureau be extended a vote of thanks from the assembly for calling this meeting and that we request that another meeting be called at an early date.

[The motion was seconded, and upon a vote being taken it was carried unanimously.]

MR. DENNISON. I would like to make another motion, namely, that the Children's Bureau be asked to include in their next program a paper as to the control of street trades.

[The motion was seconded, and upon a vote being taken it was carried unanimously.]

The meeting adjourned.



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U. S. DEPARTMENT OF LABOR
JAMES J. DAVIS, Secretary
CHILDREN'S BUREAU
GRACE ABBOTT, Chief

THE WELFARE
OF CHILDREN IN BITUMINOUS
COAL MINING COMMUNITIES
IN WEST VIRGINIA

By
NETTIE P. MCGILL

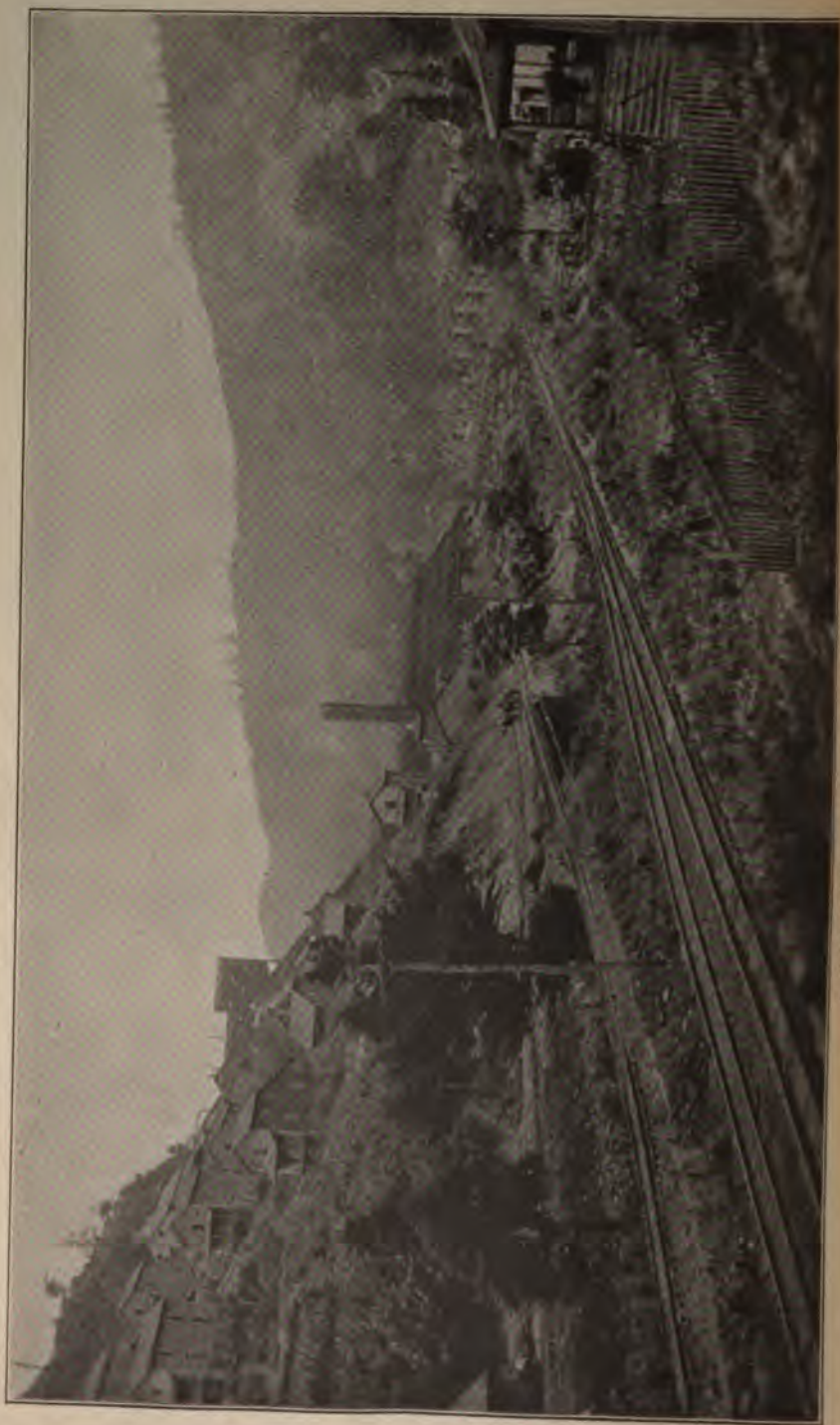
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CHILDREN'S BUREAU

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, December 5, 1922.

SIR: There is transmitted herewith a report entitled "The Welfare of Children in Bituminous Coal Mining Communities in West Virginia."

The investigation upon which this report is based was made under the direction of Ellen Nathalie Matthews, director of the industrial division of the Children's Bureau. The field work was directed by Ethel M. Springer and the report written by Nettie P. McGill, both of the staff of the industrial division of the bureau.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

Hon. JAMES J. DAVIS,
Secretary of Labor.

THE WELFARE OF CHILDREN IN BITUMINOUS COAL MINING COMMUNITIES IN WEST VIRGINIA.

INTRODUCTION.

The present inquiry into the welfare of children in bituminous coal mining communities¹ was made with the purpose of studying conditions incident to life in a mining town which might in any way affect the child, in order to ascertain, if possible, what it means to a child to be brought up in such a community so far as his health, his opportunities, and his general well-being are concerned. The basic character of the industry lends significance, from an industrial as well as a social point of view, to any study of conditions the improvement of which might be expected to make coal mining more attractive to the miner and the miner's family.

The study was made in Raleigh County, W. Va., a State second only to Pennsylvania in the amount of bituminous coal mined. In 1918, of the total number of men in the United States engaged in the production of bituminous coal 15 per cent—89,530 men—were employed in the mines of West Virginia; of the total value of coal mined, that of the West Virginia product was 15 per cent, or \$200,659,368.² Raleigh County is among the larger producing counties, being surpassed in the amount of coal mined by only three other counties—McDowell, Logan, and Fayette. It was selected for study as typical, on the whole, of many of the bituminous coal mining districts of the Appalachian Mountain system, which are found in seven States—Pennsylvania, Maryland, Virginia, Kentucky, West Virginia, Tennessee, and Alabama. Moreover, at the time of the survey, in the summer of 1920, it was free from serious labor disturbances, such as were taking place in certain sections of the State. Some of the coal fields in the county were unionized, others were not; and communities in both union and nonunion territory were included in the survey.

Raleigh County lies in the southern part of the State, wholly within the Allegheny Plateau. It is extremely rough country, the valleys being narrow, hemmed in by steep slopes, which range in height from

¹ This is the second study of conditions surrounding children in mining districts made by the Children's Bureau. The results of the first study were published in *Child Labor and the Welfare of Children in an Anthracite Coal-Mining District*, U. S. Children's Bureau Publication No. 106, Washington, 1922.

² Leshner, C. E.: *Coal in 1918*. Part A, Production, pp. 699, 701, 708, and 810. U. S. Geological Survey, Washington, 1920.

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2,000 to more than 3,500 feet above sea level; areas of flat or undulating plateau with rolling upland and broad valleys, which are about the only areas of the county under cultivation, are small. Drainage is into the Guyandot, Coal, and New Rivers through numerous small streams or creeks, along which the mining settlements have sprung up.

Agriculture and lumbering are the only industries besides coal mining, and neither is of great importance in the county.

Prior to the opening of the coal mines, settlement was slow. Most of the population lived on rough mountain farms, and consisted of the descendants of the hunters and trappers from Virginia, North Carolina, and Maryland who had made the first settlements at the end of the eighteenth century. It was not until about 1900, with the construction of a branch line of the Chesapeake & Ohio Railroad, followed in 1907 by the building of the Virginian Railroad, that the industrial development of the county began. The Cabin Creek branch of the Chesapeake & Ohio offered an outlet to the coal mines of the northwestern part of the county, while the Winding Gulf branch of the Virginian Railroad opened important fields in the southern part. A considerable portion of the county, however, is still without adequate transportation facilities.

The only town of any size is Beckley, the county seat, with a population of 4,149.³ It is located in the north-central part of the county and is the trading center of the farming districts and the coal fields. The only other settlements are small mining villages, the largest with probably not more than 1,200 inhabitants. The population, even in the mining communities where foreigners have begun to come in, is still predominantly native, 15 per cent, as compared with 6 per cent of that of the State as a whole, being colored.⁴

The present study included 11 representative mining villages, of which some were typical of the smallest and most backward settlements, others of the larger, older, and better-developed communities. The largest had a population of approximately 1,200, the smallest about 200 inhabitants. All were within 15 miles of Beckley, principally in the eastern half of the county, the most inaccessible of the settlements being excluded for practical reasons. Every home in which there was a child under 18 years of age was visited. Wherever possible the mother or the father, or both, were interviewed, otherwise the nearest relative. In addition to the schedule study, certain phases of child welfare were covered by supplementary interviews and surveys. These included an inquiry into community conditions;⁵

³ Fourteenth Census of the United States, 1920. Vol. III, Population, p. 1111.

⁴ Fourteenth Census of the United States, 1920. Vol. III, Population, pp. 1100, 1108.

⁵ Including a survey of a mining community which was in many respects a model one and which would have been included in the schedule study had it been more easily accessible from Beckley, the headquarters of the Children's Bureau agents.

a brief survey of school facilities in the school districts in which were situated the mining settlements visited; and an inquiry into conditions among miners' families living outside mining communities, either in the open country or in some small settlement not owned by a mining company. The information gathered from the families scheduled and by personal observation was supplemented through interviews with superintendents and physicians of the mining companies, union officials, school authorities, and other prominent local persons.

In all, 645 families, with 1,965 children, were interviewed. The great majority (59.4 per cent) of the families were native white, and a large proportion (25 per cent) were colored. Unlike the anthracite and the older bituminous fields, the West Virginia coal mines are worked mainly by natives, many of whom are also natives of the State. Less than one-fourth of the men employed in 1920 at the mines and coke ovens of the State, and an even smaller proportion of those working in Raleigh County mines, were of foreign birth—chiefly Italian, Polish, Hungarian, Greek, and Spanish.⁹ Of the families visited, 93 (15 per cent) had foreign-born fathers. Of these fathers, 17 were natives of the British Isles—recalling the early days of mining in this country, when the workers were mainly English, Welsh, and Irish. But the majority represented the newer immigrations from southern and eastern Europe. The greatest number (34) were Poles by birth; others were chiefly Hungarian, Lithuanian, Italian, and Spanish. Practically all the foreign-born fathers were able to speak English.

As might be expected in communities whose reason for being is the coal industry, almost nine-tenths of the fathers or other chief breadwinners were employed by mining companies. Those who were not lived in the community either by virtue of the fact that some other member of the family worked in the mines or because their callings were useful or necessary to the mining population. Thus, among heads of households not working for the mining companies were a storekeeper or two, a teacher, a barber, and a telegraph operator. Not quite three-fourths of all the fathers were engaged in the mining industry itself, practically all in underground occupations. Among those who were employed by mining companies but not in executive positions or in occupations peculiar to mining were electricians, carpenters, blacksmiths, clerks, physicians, and deputy sheriffs.

⁹ Annual Report, West Virginia Department of Mines, 1920, pp. 12, 254, 255.

4 CHILDREN IN COAL MINING COMMUNITIES, WEST VIRGINIA.

TABLE I.—Occupation of chief breadwinner, by type of employment.

Occupation.	Chief breadwinners, June 30, 1920.						
	Total.	Employed by mining companies.				Not employed by mining companies.	
		Total.	On surface.		Underground.		
			Number.	Per cent. ¹	Number.		Per cent. ¹
Total.....	639	567	157	27.7	410	72.3	72
Mining occupations.....	470	470	67	14.3	403	85.7	
Superintendent, assistant superintendent, manager.....	10	10	7		3		
Bosses and foremen:							
Driver boss.....	3	3	1		2		
Fire boss.....	4	4			4		
Foreman, assistant foreman.....	26	26	3		23		
Tipple boss.....	3	3	3				
Operatives:							
Brattice man.....	4	4			4		
Laborer, surface.....	42	42	42				
Laborer, underground.....	26	26			26		
Machine man, runner, cutter.....	16	16			16		
Miner.....	248	248			248	100.0	
Motorman.....	32	32	4		28		
Pumper, pipeman.....	11	11			11		
Rock man.....	3	3			3		
Timberman, rodman.....	4	4	1		3		
Trackman.....	26	26	2		24		
Trip rider.....	7	7			7		
All other.....	5	5	4		1		
Other occupations.....	109	97	90	92.8	7	7.2	72
Agriculture and forestry.....	10	7	7				3
Clerical.....	8	7	7				1
Domestic and personal service.....	27	1	1				26
Manufacturing and mechanical.....	72	62	56	90.3	6	9.7	10
Blacksmith.....	11	11	11				
Carpenter.....	16	13	13				3
Electrician.....	18	17	11		6		1
Engineer.....	9	7	7				2
Machinist.....	5	4	4				1
Other.....	13	10	10				3
Public service.....	7	6	6				1
Professional.....	10	5	4		1		5
Trade.....	10	6	6				4
Transportation.....	25	3	3				22

¹ Not shown where base is less than 50.

The population of these developing bituminous coal mining communities, unlike that of the typical anthracite district, is a floating one. The average life of the mine is short, and a miner after living but a few years in one place may be compelled to move on to another because the mine in which he has been employed is worked out. Furthermore, production varies from year to year, expanding or contracting with industrial prosperity or depression, and during periods of nonproduction the workers drift from mine to mine wherever work can be found. Comparatively few of the fathers in the families interviewed were found to have been working for the same mining company for any considerable length of time—only 28 per cent had been employed by the same mining company five years or more, and almost one-third (30.7 per cent) had been less than one year with the company employing them at the time of the interview.

Whereas in the anthracite district studied by the Children's Bureau 92 per cent of the families interviewed had lived in the district for five years or more,⁷ only about one-fourth (26 per cent) of the chief breadwinners in the present study had been living in the same community for at least five years.

TABLE II.—Length of residence of family in present community, by color and nationality of chief breadwinner.

Color and nationality of chief breadwinner.	Families.														
	Total. ^a	Length of residence in present community.													Not reported.
		Under 1 year.		1 year, under 3.		3 years, under 5.		5 years, under 10.		10 years, under 15.		15 years and over.			
		Num-ber.	Per-cent. ^b	Num-ber.	Per-cent. ^b	Num-ber.	Per-cent. ^b	Num-ber.	Per-cent. ^b	Num-ber.	Per-cent. ^b	Num-ber.	Per-cent. ^b		
Total.....	639	220	34.4	156	24.4	96	15.0	113	17.7	36	5.6	15	2.3	3	
White.....	e477	158	33.1	121	25.4	71	14.9	92	19.3	22	4.6	10	2.1	c 3	
Native.....	383	132	34.5	92	24.0	58	15.1	70	18.3	20	5.2	10	2.6	1	
Foreign born..	93	26	.....	29	.....	13	.....	22	.....	2	.....	.....	.....	1
Polish.....	34	7	.....	11	.....	8	.....	7	.....	1	.....	.....	.....	.....
Hungarian (Magyar).....	9	3	.....	2	.....	1	.....	2	.....	1	.....	.....	.....	.....
Lithuanian..	9	2	.....	3	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
English.....	8	1	.....	3	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
Scotch.....	8	3	.....	2	.....	1	.....	1	.....	.....	.....	.....	.....	1
Italian.....	7	4	.....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Spanish.....	6	1	.....	4	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Other.....	12	5	.....	2	.....	2	.....	3	.....	.....	.....	.....	.....	.....
Colored.....	162	62	38.3	35	21.6	25	15.4	21	13.0	14	8.6	5	3.1	.....

^a Excluding 6 families in which there were no chief breadwinners.

^b Not shown where base is less than 100.

^c Including 1 family the nativity of whose chief breadwinner was not reported.

⁷ Child Labor and the Welfare of Children in an Anthracite Coal-Mining District, p. 7, U. S. Children's Bureau Publication No. 106. Washington, 1922.

THE HOMES OF THE CHILDREN.

THE MINING TOWN.

The child of the coal miner in the West Virginia mountains lives very often in what is practically a frontier settlement. It is remote and isolated, shut in by high, wooded hills, a straggling line of low houses in the wilderness. The camps visited during the survey were only from 3 to 13 miles from Beckley—the county seat and the nearest incorporated town of any size—but the distance in miles gives no idea of their inaccessibility. Railroad service was infrequent and uncertain. For example, the single daily train from Beckley to one of the camps, only about 8 miles distant, took over two hours for the



ONE OF THE MOST INACCESSIBLE AND PRIMITIVE OF THE MINING SETTLEMENTS.

run under the most favorable conditions and was frequently delayed. Most of the camps were from one-half mile to several miles away from rough county roads, which were reached from two settlements by walking over a mountain, and from two others by mounting in a "hoist" drawn by cables to the top of a steep hill. Uncertainty as to the probable lifetime of the mine makes for cheaply and hastily constructed houses, primitive sanitation, and other hardships—both sanitary and cultural—of pioneer life.

Not only isolation and the temporary nature of the settlement but other factors, also, combine to prevent the development of the mountain mining town along the lines of the ordinary small town or village.

Coal mining is the sole industry, and the coal company owns and controls the town. The coal-mining company and the coal-land company own the town site and the whole surrounding territory, controlling in some cases the roads leading into the town. Practically all the houses and, as a rule, the stores and other buildings, are company owned. Sometimes even the church, if there is one, and the school-house are built by the company, which often supplements or pays in full the salaries of the pastor and the teacher. Whether conditions are good or bad depends upon the policy of the coal company and not upon the will of the inhabitants. If the policy of the company is to provide attractive houses and clean and wholesome surroundings, it is in an exceptionally good position to demand and secure immediate response to its program. If, on the other hand, company



HOUSES LOCATED ALONG RAILROAD TRACKS.

standards are below those of the community, the inhabitants may not take steps to secure clean streets, for example, or a safe water supply. They have no redress from conditions which may be intolerable, except to move into another camp.

The West Virginia coal miner does indeed move frequently. Although the irregularity of mining operations accounts for much of the shifting, another element is no doubt the hope which the miner or his wife cherishes of bettering their living conditions. Of 464 families in the present survey who reported the number of removals which they had undergone, one-third had moved at least once every two years. Some of the families found it impossible to remember the number of times they had moved. (One mother declared that she moved "every time the moon changed.") In five of the settlements visited half the families interviewed had been in residence less

than one year, the percentage of removals per month being much higher in the less attractive camps than in the others. One family had moved twice within eight months preceding the survey. "We moved from the last place," said the mother, "because dead hogs were left lying around in the street." The labor turnover in the



THE MOST ATTRACTIVE OF THE MINING CAMPS.

Level streets, concrete sidewalks, well-kept buildings and fences, were unusual features.

most attractive town was said by the superintendent of the mining company to be negligible; there was usually a waiting list, and newcomers almost invariably had to wait for a house—the father of the family coming in first, the family moving in when a house became vacant.

TABLE III.—Average number of removals since marriage, by color and nativity of chief breadwinner.

Color and nativity of chief breadwinner.	Families.								
	Total. ¹	Average number of removals since marriage.							
		None.	More than once a year.	Once a year.	Less than once a year, but once in 2 years.	Less than once in 2 years, but once in 3 years.	Less than once in 3 years, but once in 4 years.	Less than once in 4 years.	Not reported.
Total.....	639	52	50	7	101	61	61	132	175
White.....	² 477	31	42	6	84	47	40	93	³ 125
Native.....	383	26	37	4	76	37	39	65	99
Foreign-born.....	93	5	5	2	8	10	10	28	25
Colored.....	162	21	8	1	17	14	12	39	50

¹ Excluding 6 families in which there were no chief breadwinners.

² Including 1 family the nativity of whose chief breadwinner was not reported.

The ordinary small mining settlement is uninviting in appearance. Apparently no consideration other than proximity to the mining operations had influenced the choice of site for the towns included in survey. They lay usually in a narrow hollow between two high ridges, the houses being in some camps located on both sides of the road track or of a little stream running through the valley. In some towns there was but little room at the side of the track for the pedestrian to use if a train went by, as the tracks were on an embankment, and between the embankment and the houses was a ditch, usually filled with water; foot bridges were built from the



A NEGRO SECTION OF ONE SETTLEMENT.

Most of the camps had rough and irregular roads and no sidewalks.

road embankment to the front doors of the houses.¹ In other camps the houses were built on steep hillsides where it was difficult to get a foothold, especially in wet weather when the hillsides became slippery with mud. In some cases the hillside paths were littered with the remains of old buckets, tubs, and tin cans. The roads were usually rough and irregular, and in wet weather turned to black mud and puddles. There were no sidewalks, as a rule, and only such paths as had been worn by use. For the most part the houses were a uniform hue—usually a dark gray or dull brown, though in some camps the companies have literally “painted the town red.” In one place, also, four or five houses had been freshly painted in as many different colors. The houses occupied by company superintendents and other executives offered an acceptable relief from the notonous sameness of the miners’ houses. They were usually better-sized dwellings with porches, lawns, trees, and shrubbery.

¹ See illustration, p. 7.

In some settlements waste matter entered the creeks flowing through the center of the town, privies were tumble-down, and incredible amounts of garbage and rubbish lay on the ground. Chickens, ducks, geese, and hogs wandered about, adding to the general disorder and unwholesomeness.

That the mining settlement may be prepossessing, even picturesque, in appearance was proved by the aspect of one just outside the area included in the schedule study.^{1a} In this settlement the roads were level and well kept, the streets lighted, the sidewalks of cement. Houses, outbuildings, and fences were in excellent repair. The power house in the center of the camp was covered with vines and surrounded with lawns and flower beds. The houses were painted in light colors with red roofs, and offered a pleasing variety in design as well as color. Well-kept lawns and flower gardens were inclosed in painted picket fences. Vines grew along the fences and trailed over the porches. Lying at the base of the dark, wooded mountains, the town looked like a pretty toy.

HOUSING.

Usually the only houses to be had in the towns belong to the mining companies and the families must rent and live in them whether they like them or not. More than nine-tenths of the families interviewed lived in houses rented from the companies. Twenty-five others lived in company houses without paying rent: For example, in some cases the wife of a miner who had been killed, or the woman who ran the camp boarding house, was given free housing by the company; more rarely others—in one instance a telegraph operator, in another a barber—were allowed to live in company houses without paying rent, as an inducement, no doubt, to settle in the town. Only six families rented houses not owned by mining companies and only nine—about 1 per cent—owned their own houses. These were outside the boundaries of two camps, but virtually formed a part of the respective communities. In or near all the remaining camps there was not one family owning its own house.

It was customary on taking a house to sign a lease, though at least one company merely required the tenant to "sign up" for a house in order that the rent might be deducted from his pay. One form of lease included the following clauses: (1) Notice of five days necessary by either party; (2) eviction without notice if tenant quits employ of company; (3) rent at \$2 a day if tenant continues to occupy house after quitting work. One or two families said that these terms were not enforced. It was not uncommon for men to sign the lease without knowing what was in it. Several stated that they had not read it.

^{1a} See Note 5, p. 2.

One Austrian Polish miner said, "Super told me to sign paper—no read English. Don't know what it said." Another foreign-born miner observed, "They handed the lease out through a little pigeon-hole at the office and didn't give you time to read it. You know they are not educated in this town like they are in cities."

The usual rental, deducted by the company before the miner received his pay, was from \$5 to \$7.50 a month; \$10 or more was seldom paid, except for houses containing at least five rooms. In one camp, according to the superintendent, old houses rented for \$1.75, new ones for \$2, a room.

When not absolutely alike in every detail, as whole lanes of them often were, the miners' houses were built on the same general plan—detached or semidetached one or two-story structures, containing usually three or four rooms. They were invariably of wood, some being clapboarded, others of upright boards with or without weather-stripping; erected without cellars, they stood usually on piles, in many cases with an open space beneath. Most of them were generally lacking in the essentials of a comfortable dwelling; rooms were small and few in number; they were inconvenient, insanitary, ill-ventilated, and cold. As the houses were built of the cheapest material, usually not weatherboarded, and in many cases not plastered or even ceiled, the fireplaces which as a rule were the only means of heating besides the cookstove could not keep them comfortably warm. Some were said to be "like paper" when the wind struck them. The occupants of a number of the houses had tacked newspapers or old magazine covers over the rough board walls—one family had papered with samples of wall paper—in order to keep out the cold. The flooring was often only a single layer of boards, sometimes with cracks an inch or more wide, placed over open foundations through which the cold air circulated freely. Knot holes and cracks in the wall were not uncommon. Not infrequently the houses were damp as well as cold, as they were built close to the ground and the space beneath the house was not always kept dry; water from a near-by spring ran under one house. The open foundation also offered a refuge for animals, from which vermin and unhealthful odors easily entered the house. Many families found it, also, a convenient place for rubbish of every description—an old bedstead in which children and animals were seen playing at the time of the agent's visit was stored under one house, inviting disease and fire.

Many of the houses were in a bad state of repair, with leaking roofs, loose windows, and sagging doors. The roof of one house leaked in every room, and water and snow came in under the doors; in another it was necessary to put pans around to catch the water. The weather-stripping was falling off some of the houses. Where

they had been papered the paper, old and discolored, was frequently hanging in ribbons.

In such houses as these the housewife has few conveniences—an inefficient heating system, no inside water supply or toilet, no bath. Electric light, found in all except one or two of the camps, was practically the only modern convenience in most of the miners' houses. The lack of household conveniences greatly increases the housewife's work and makes it harder for her to give her children the attention that they should have. Running water is a minimum essential for comfort. The camp described on page 12 had running water in each house, with white enameled sinks and pipes for drainage connected with sewers, proving that such conveniences are not



A COMMON TYPE OF HOUSE.

Many of the houses are built on piles on rough, uneven ground.

impossible of achievement in the mountain mining town. The need of a bath in the miner's home is a very real one, especially if there is no "wash and change" house at the mouth of the mine. Without a bathroom, the miner's daily bath is likely to be taken under uncomfortable and inconvenient circumstances. Water—a small amount at best—must be heated on the kitchen stove, and in the small, crowded houses strict privacy is difficult to secure. In all the 11 camps only 52 of the families interviewed—usually those of the mine executives—had baths in their houses; so that only 136 of the 1,928 children enjoyed what in these days is considered a necessity.

There was little variety in the houses to meet the needs of individual families. When the families were large or even of average size insufficient space necessitated overcrowding. Almost half the

families lived in 4-room houses and practically two-thirds in houses having 4 rooms or fewer. Of all the families visited 16 per cent were living in houses with an average of 2 persons or more per room—a proportion larger by half than that found in the Shenandoah anthracite district previously surveyed by the Children's Bureau. Indeed, room congestion in the mining towns included in the present study seemed quite as serious as in crowded city districts. In 40 per cent of the homes there were 3 or more persons to each sleeping room, and in at least 1 family in every 7 there were from 4 to 9 persons to each bedroom. In 3 native white families 8 or 9 persons, usually parents and young children, slept in one room. There was less overcrowding, however, among native families, both white and



NEWLY BUILT HOUSES.

The modern houses have closed-in foundations and are clapboarded and painted.

negro, than among families in which the father was foreign born. This may perhaps be due to the custom, more prevalent among immigrant than among native families, of taking lodgers. One-fourth of all the families keeping lodgers averaged 2 or more persons to a room, whereas only 13 per cent of those who kept no lodgers were thus crowded.

In one-fifth of the homes visited there were lodgers. Of these 132 families, 100 lived in houses containing 3 or fewer bedrooms and numbering in their households from 3 to 14 persons. Three families had only 3 bedrooms for 14 persons, including lodgers; 2 families, each of 5 members, including lodgers, had only 1 bedroom. Forty-nine families keeping lodgers had only 2 bedrooms, with the number of persons in the household ranging from 3 to 10. Many of these families were ones in which the children were young, but others had

14 CHILDREN IN COAL MINING COMMUNITIES, WEST VIRGINIA.

boys and girls from 13 to 16 years of age. A 16-year-old girl in a Swiss family felt keenly the fact that the male lodgers in her family must pass through her room to reach their own. The practice of taking lodgers in small quarters exposes growing children, especially, not only to the discomfort and unhealthfulness of overcrowding but also to the serious social evils which may result from a lack of privacy.

TABLE IV.—Number of persons in household, by number of rooms in house.

Number of persons in household.	Total. ¹	Families living in houses containing specified number of rooms.							
		2	3	4	5	6	7	8 and over.	Not reported.
Total.....	639	12	103	298	75	86	15	44	6
Persons in household:									
2.....	8	3	2	1					2
3.....	94	2	26	48	3	9	1	2	3
4.....	132	3	29	57	15	22	2	4	
5.....	116	4	23	52	16	11	4	5	1
6.....	95		7	50	13	14	3	8	
7.....	67		6	36	10	8	1	6	
8.....	48		5	24	8	5	1	2	
9.....	31		2	16	3	5		5	
10.....	17		1	8	4	2	1	1	
11.....	12		1	6	1	2	2		
12.....	5		1			2		3	
13.....	2					2			
14.....	6				2	2		2	
15 and over.....	6							6	

¹ Excluding 6 families in which there were no chief breadwinners.

It should be pointed out that the rents paid for these houses may perhaps be too low to permit of supplying the miner with a decent, to say nothing of a comfortable and attractive, dwelling. On the other hand, it should be remembered that the miner is obliged to occupy the house provided, even though he might be able and willing to pay more for a better one. In this connection, Joseph H. White, of the United States Bureau of Mines, in *Houses for Mining Towns*, says:²

They [the company officials] determine, within certain limits, what proportion of a man's wages shall be spent on house rent. This consideration should restrain fanciful and unnecessarily expensive building: the other extreme should likewise be avoided. True economy should be distinguished from cheapness. Ugly, insanitary, uncomfortable shacks should not be built even if, because of their cheapness, there is a demand for them from tenants. The obligation of the industry to society as a whole as well as to the tenant ought to forbid this. A cheerful, strong, healthy, virile race will not rise out of the filth and squalor of cheap hovels.

SANITATION.

The water supply.

Very few families had running water in the house. The majority were supplied with water from a central source, piped to hydrants more or less conveniently located. In the best camps one hydrant

² White, Joseph H.: *Houses for Mining Towns*, p. 6. U. S. Bureau of Mines Bulletin No. 87. Washington, 1914.

supplied only 3 or 4 families, but in some the number of families averaged 6, and in one a single hydrant was used by 11 families. Other camps had no central supply, water being obtained from wells by means of pumps, 15 or 20 families sometimes using the same pump.

The source of the supply was various and not always such as to insure safe and abundant water. In one camp the water, obtained from a drilled well some 400 feet deep, was safeguarded against impurities by a system of filtration and chemical treatment. In others, water was piped direct to the hydrants from springs and creeks. In one camp in which the water had been obtained from a creek into which sewage from the houses having plumbing and the contents of many privies drained typhoid fever had been prevalent; recently the company had bored a 400-foot well and was planning to extend the hydrant system so that every house should have a hydrant within 50 yards. Regular analysis of the water was uncommon, but one camp reported that a sample was sent once every three months to the State hygienic laboratory, and two others reported annual analysis. Sometimes the water supply was scant as well as of doubtful purity. For instance, most of the 12 drilled wells supplying the people of one settlement were said to be out of order at the time of the survey—in July. In another camp one of the mothers reported that she was obliged to use spring water for all purposes as the hydrant supply had been cut off for a week.

Many families preferred to use water from shallow wells or even from tainted springs and creeks because, they said, the hydrant water was "rusty" or "thick." As in most rural communities where they are common, springs furnished a favorite source of drinking water even when the hydrant water was used for other purposes. A much-prized spring in one camp was at least 200 yards up a mountain side from the nearest house, and probably a quarter of a mile from the farthest. Unless the spring is concreted to prevent local contamination and is periodically examined the water is likely to be unsafe, and much of the spring water used was not fit to drink. Many springs were contaminated by chickens and stock, or by dishwater, drainage, and garbage; many were situated in hollows on a lower level than surrounding privies. One privy standing above the house on a steep slope, at the foot of which was a spring used by some of the families, had not been emptied for almost a year, the contents draining down the slope; three of the children had had typhoid fever since their family had occupied the house.

Toilets.

Fifty-four families, chiefly those of men holding executive positions with the mining companies, had water-closets in the house and one family had a water-closet in the yard. Most of the families—

nine-tenths—had only privies, and seven households visited in four different camps had no toilet of any kind. Eight per cent of the families were obliged to share their privies with other families, sometimes as many as four or more. The privies in one camp were situated along the road and never locked, so that any passer-by could and did use them. One woman said that when she had first moved to the camp she had cleaned hers up, but that the next day it was as bad as ever. Many privies were ramshackle, with doors lacking and pits broken. One was tied to a tree to keep the high waters of the creek from washing it away; another, blown over by the wind, had merely been propped up against a tree by the men sent to repair it, no hole being dug nor box provided.

The privies were commonly of the dry, open-back, surface type to which chickens, hogs, and flies had easy access, especially as they were not screened. They were seldom and insufficiently cleaned: cleaning once a year appeared to be the standard, though in one camp privies were said to be cleaned at the request of the families, and in at least one or two others they were never cleaned except by the occupants of the houses. In one camp it was the custom to move the privy instead of cleaning it, digging a new hole and covering the old waste matter with dirt. One mother reported an entirely novel method of cleaning the family toilet—being tied to a tree just over the creek it was upturned and cleaned when the water of the creek rose, and restored to its upright position when the waters subsided. Certain precautions were taken by the company in one or two camps—once or twice a year, according to one superintendent, the pits beneath the privies were dug deeper and the waste buried, disinfectant being used; in another camp, the waste matter was shoveled out, piled outside the privy, and sprinkled with lime, which, however, was washed away, it was said, by the first heavy rain.

Odors from privies and sewage were very offensive. In some places sewage filled the creeks winding through the center of the towns or drained into hollows and stood with surface water in stagnant pools. One family whose house faced a ditch carrying part of the town sewage reported that they were unable to sit on the front porch, and another said that "when the wind blows a certain way you have to shut the door," because of the unwholesome and disagreeable odors.

Disposal of refuse.

In none of the settlements visited was garbage or other refuse regularly removed by the company, though in one camp the company would take cans and other rubbish, if collected in barrels, to a dump some distance away. Garbage was commonly fed to the hogs, or dumped by the families into the creek or hollows near their homes,

though some of the executives' families had theirs hauled away at their own expense and disposed of outside the village. Garbage, tin cans, broken crockery, and other rubbish littered almost every road in some of the camps; in some, the almost stagnant creeks contained cans, wooden crates, bottles, and even old furniture, shoes, and clothing. In one camp a dead cat had been left lying in the road for five days, though it was said that the nuisance had been reported to the authorities repeatedly.

Chickens, hogs, and other domestic animals are kept almost as commonly as on the farms from which many of the miners come, though in the relatively crowded little mining settlement they are a constant source of danger unless careful regulations are in force. Apparently no attempt was made in the camps visited to restrain stock from spreading the contents of privies and contaminating the water supply, or to treat accumulations of manure in such a way as to prevent the breeding of flies.

Under the primitive sanitary conditions prevailing, flies abounded. Mosquitoes also were numerous; for tin cans and bits of crockery filled with water, uncut weeds, open ditches containing stagnant water, and undrained swamps, were to be found in practically all the settlements. Nevertheless, the necessity for screening was not generally recognized; less than one-fifth of the houses occupied by the families interviewed were screened. Supplying screens at cost at the company store might prove helpful in educating the mining town to the importance of this protection against fly- and mosquito-borne diseases. In the camp referred to on page 10 screens were supplied with the houses.

CHILDREN IN SCHOOL.

SCHOOL ATTENDANCE.

The West Virginia compulsory school attendance law, as amended in 1919,¹ required children between the ages of 7 and 14² to be in school during the entire school term, making exceptions, however, in cases of extreme poverty, or when a child was physically or mentally unable to attend or lived 2 miles or more from the schoolhouse.³

Included in the present study were 936 children between 7 and 18 years of age. Of these, 78 had not reached the compulsory school age at the beginning of the school year preceding the survey, and had not entered school. Thirteen others, though between 7 and 18 years of age, had never gone to school; of these, 6 were mentally or physically unable to attend, and 4 had no school to attend, or none within a reasonable distance. Seven hundred and thirty-four children were enrolled in school. These included practically all children between 7 and 14 years of age, as might be expected from the law, but what is more surprising in an industrial community, it included also more than four-fifths (84.7 per cent) of all the children between 14 and 16, and over three-fifths of those between 14 and 18. Most of the children had entered at 6 years of age, but a few—apparently for no very good reason—had reached their teens before beginning to go to school.

Although the law requires each school district to appoint at least one attendance officer, little attention seemed to be given to enforcing regular attendance. Twenty-four children of compulsory school age, i. e., under 14, had not attended a single day during the school year just completed at the time of the survey, though 14 of them were reported by the parents as still in school. Only 71 per cent of the pupils for whom attendance records were secured had attended so much as 90 days, or three-fourths of the legal minimum term.⁴ This record is to be compared with that of a township in the bituminous coal mining regions cited by the U. S. Bureau of Education⁵ as enforcing the compulsory attendance law unusually well, in which 83 per cent of the pupils enrolled had attended more than three-

¹ West Virginia Acts of 1919, ch. 2 (amending and reenacting Barnes' Code, ch. 45, secs. 122 to 128).

² Sixteen if not employed.

³ Children were also exempted under conditions making attendance impossible or hazardous, or for other reasons accepted as valid by the county or district supervisor or superintendent of schools.

⁴ Attendance records were secured from teachers' registers by bureau agents.

⁵ Deffenbaugh, W. S.: *Schools in the Bituminous Coal Regions of the Appalachian Mountains*, p. 7. U. S. Bureau of Education Bulletin, 1920, No. 21.

fourths of the term of 160 days, and over half had attended almost every day.

The minimum school term fixed by the West Virginia law was only 120 days,⁶ and all except two of the 11 camps visited reported the minimum term. Sometimes the mining companies supplement district funds in order to lengthen the school term, a practice which can not of course be recommended in lieu of adequate school support by public taxation, though it has the merit of securing for the children a much-needed extra month or two of schooling. Funds had been thus supplemented in one camp, the school of which was attended also by the children living in another settlement. One of the company superintendents stated that the company had agreed to keep the school open an additional month, paying all salaries, provided the teachers maintained an 80 per cent attendance; but that the plan had not been successful, as attendance beyond the minimum school term was not required by law.

TABLE V.—School attendance of children between 7 and 18 years of age, by sex.

School attendance during school year, 1919-20.	Children between 7 and 18 years of age, June 30, 1920.					
	Total.		Boys.		Girls.	
	Number.	Per cent distribu- tion.	Number.	Per cent distribu- tion.	Number.	Per cent distribu- tion.
Total.....	936		459		477	
Total reporting.....	692	100.0	299	100.0	303	100.0
Not in school.....	103	17.1	50	16.7	53	17.5
In school.....	499	82.9	249	83.3	250	82.5
1 day, less than 10.....	1	0.2			1	0.3
10 days, less than 20.....	5	0.8	2	0.7	3	1.0
20 days, less than 40.....	7	1.2	3	1.0	4	1.3
40 days, less than 60.....	15	2.5	6	2.0	9	3.0
60 days, less than 80.....	42	7.0	24	8.0	18	5.9
80 days, less than 100.....	133	22.1	60	20.1	73	24.1
100 days, less than 120.....	256	42.5	134	44.8	122	40.3
120 days, less than 140.....	29	4.8	14	4.7	15	5.0
140 days, less than 160.....	3	0.5	2	0.7	1	0.3
160 days, less than 180.....	8	1.3	4	1.3	4	1.3
Not reporting.....	256		120		136	
Under age ¹	78		40		38	

¹ Not 7 years of age, Sept. 30, 1919.

A good deal of the absence reported by the children in these mining villages was such, apparently, as to call for the provision of more adequate school facilities as well as for a more rigorous enforcement of the law. Some of the schools were so crowded that many of the younger children, though of compulsory school age, could not be accommodated and were turned away. Two of the smaller communities had no schools at all and two others had no schools for colored children; many of the children in these towns had to walk at least a

⁶ To be extended 10 days per year for four years, becoming 160 days in 1923-24 and thereafter. West Virginia Acts of 1919, ch. 2 (amending and reenacting Barnes' Code, ch. 45, sec. 54).

mile and sometimes two miles to another camp over roads which in winter or muddy weather were practically impassable, so that they could attend, as one father expressed it, only on "picked days." Several parents complained that the road to the nearest schoolhouse was dangerous. One father who had not sent his children to school until they had reached the age of 16, remarked that he "wasn't going to have his children butchered up by the railroad even to get an education."

SCHOOL FACILITIES.

The schoolhouse and its equipment.

In the school districts in which are located the camps included in the survey, 28 schools were visited. Schools in the mining towns as



THE TYPE OF SCHOOLHOUSE FREQUENTLY PROVIDED.

well as those in the distinctly rural communities were rural in type, many being one-room, one-teacher schools, offering only five or six elementary grades.

The recently constructed buildings were fairly substantial and attractive, and though not always conforming to the best modern standards in certain details, such, for example, as side lighting, compared favorably with rural school buildings being erected in other States.

In many of the mining camps the mining companies had contributed in some way to the school—erecting buildings, furnishing equipment, or increasing teachers' salaries. Although some of the companies were generous in their contributions, others did little or nothing; in the latter instances all too often the public-school authorities likewise had provided inadequately in the expectation that the companies would supply what was needed. Thus some of the poorest schools

re in buildings furnished by the mining companies; for example, in ee camps the school for colored children was held in a company- ned miner's cottage or in an old church building furnished by the npany. Many of the schools located in mining camps were seri- ly lacking in equipment. On the other hand, some of the rural ools visited were modern and well equipped, proving that the ool authorities could provide adequately if they felt the obligation do so. Many schools, both in the open country and in the mining ps, were of the old-fashioned, inconvenient, uncomfortable type building. Of the 28 school buildings visited, 12 had no hall or tible, and 21 no cloakrooms, coats and hats being commonly g on nails either in the hall or the classroom or piled up on ches and chairs in the latter. Only one schoolhouse, a new



ONE OF THE MOST ATTRACTIVE SCHOOLHOUSES.

pany-built structure, was steam heated. The others, even the ver ones, were heated by unjacketed stoves in the classrooms. ly 6 had any janitor service, except such as teachers and pupils mselves provided.

It was, however, in equipment rather than in the building that the ority of these schools were most inadequate. One substantially lt school had neither desk nor chair for the teacher, only benches the children, and a makeshift blackboard, which was at the back the room. One-fourth of the schoolrooms had too few seats for average number of pupils attending, and at least five had no seats all, or from three to seven single seats for classes of from 18 to 55 pils. Mothers complained that their children had to sit on the or. In one camp 25 wooden boxes for the children to use as seats l been supplied by a grocer. Aside from desks, chairs, and black-

boards, which in many schools were inadequate, practically nothing was furnished by school authorities. Books and supplies had to be furnished by the children themselves, and many a teacher was seriously handicapped by lack of materials. Maps, pictures, charts, library books, and even a dictionary were rarely found, and one school reported that its equipment consisted of "nothing but a bell."

Only one school had a playground equipped with play apparatus, and although many of the school yards were of good size, nowhere were there any organized play activities. In a few instances there was not even a suitable yard. One school, for example, was located near the mining tippie, between railroad tracks, exposed to coal dust and noise from both.

Half the schools had no water on the premises. Several teachers said that they instructed the children to drink at home and not ask for water when in school. The common cup or dipper was in use in some schools, but teachers seemed to be making an effort to enforce the law⁷ regarding individual drinking cups, at least requiring a cup for the children of each family.

Of the 28 schools, 3 had no toilet facilities, and only 1 had a toilet within the building. Three schools having privies made no separate provision for boys and girls, though required to do so by a regulation of the State department of health,⁸ and at four other schools a single structure partitioned in two was used by both sexes.

Teachers.

Except in rare instances the children of the mining camps were taught by poorly trained teachers. Teachers' salaries in the towns included in the study ranged from \$360 to \$690 for the school year of six months, although some of them had been supplemented by the mining companies. Of 71 white teachers reporting their education in three of the school districts in which were located the mining camps visited, 42 reported that they had never gone beyond the eighth grade; though of 17 colored teachers reporting, all had had at least part of a high-school course. Many of the teachers had little experience to offset their lack of training. The teacher whom, according to one mother's story, the children "fight, curse, and knock down" is no doubt an extreme example, but unquestionably many of the teachers were too young and inexperienced to maintain ordinary classroom discipline, much less to provide the skillful teaching necessary if children are to learn anything in a short term in schools seriously overcrowded. Some of these untrained teachers are obliged to handle classes of from 45 to 60 or more pupils—one teacher had 73 children enrolled, another 81, another 100—of half a dozen nationali-

⁷ West Virginia Acts of 1913, ch. 23, sec. 1.

⁸ Rules and Regulations in regard to School Buildings, Equipment, and Grounds, p. 13. State Department of Schools, Charleston.

ties and in half a dozen grades. It is hardly surprising that, as some of the mothers said, the teachers did not "get around to" their children.

The lack of suitable rooming and boarding places in the camps makes it more difficult than it might otherwise be to obtain teachers of the right sort. A solution of the rooming and boarding problem lies in the provision of "teacherages" or teachers' homes which are now found in many communities and in some mining towns. An act⁹ of the West Virginia Legislature passed in 1920 now makes it possible for the school board of one independent school district to provide such homes. The Children's Bureau was told by school authorities that the act had been passed at the urgent instigation of some coal operators who had found it difficult to induce teachers to come into the mining camps.

The curriculum.

Many of the schools in the mining camps do not offer a full elementary course, and in others all eight grades are taught by one teacher. The fact that in many cases a child must go to the county seat to attend the seventh or eighth or even the sixth grade probably accounts in part for the large number who drop out before completing the elementary-school course. Only one camp included in the survey gave any high-school work and that did not extend beyond the first year. The nearest high school was at Beckley, from 3 to 13 miles distant from the various camps.¹⁰ One 17-year-old girl who wished very much to go to high school lived at a settlement only a few miles from Beckley, but the trains did not run at suitable times, and the girl's mother was afraid to have her walk back and forth along the road alone.

The school curriculum was confined chiefly to instruction in reading, writing, and arithmetic, and included no manual training, drawing, music, or physical training. In only two schools had even so much as a sewing class been introduced. No vocational courses were offered children under 16.¹¹

The schools were in no way fitted to follow up the unusual opportunity which was theirs in the presence in school of so large a proportion of the boys and girls over 14 years of age. Because of their isolation the children of the mountain mining community especially need opportunities in school to try out various lines of work, and they should certainly be able to obtain practical training at least in the kinds of work carried on within and near the community, including home economics, home gardening, and agriculture.

⁹ West Virginia Acts of 1920, Second Extraordinary Session, ch. 3.

¹⁰ See p. 6.

¹¹ In two of the largest camps visited evening industrial classes for adults under the Smith-Hughes Act had been held for 30 evenings during the winter preceding the survey.

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That it is possible to bring color and inspiration as well as practical worth-while training into the school life of the children in mining, as in other industrial towns, is illustrated by the following accounts of mining-town schools given by the United States Bureau of Education: ¹²

Ellsworth, Pa., is a purely mining town located about 24 miles south of Pittsburgh. The schools are organized [to include] a kindergarten, a high school, and a home-economics and an industrial-vocational school.

The physician employed by the company is the school physician. The company nurse is also at the service of the schools. The nurse gives a course in home economics, in sanitation, and in the care of children. There is an evening class on care of children for the adult women. About 30 are enrolled in the course. The home-economics teacher has a class of women in cooking and sewing two evenings a week. There are evening classes for men in mathematics and English and in subjects pertaining to mining.

Much attention is given to directed or supervised play for children below the seventh grade, two 35-minute periods a day being given to it. A special supervisor is employed.

The program is arranged on a departmental plan, so that instruction in music, drawing, play, and construction may be given by special teachers.

* * * * *

One of the most interesting educational experiments in the Luminous coal region of the Appalachian system is conducted by the Tennessee Coal, Iron & Railroad Co. in Jefferson County, Ala. There are 21 of these schools. The company furnishes buildings, employs a superintendent and special teachers, and supplements the funds of the county for running the schools. The work is done in complete cooperation with the county school board, which apportions funds to the mining-town school on the same basis as to other schools. The superintendent of the schools in the mining towns is an assistant county superintendent, but is paid entirely by the company.

Special emphasis is placed on the work in physical education carried on in the schools by the regular teachers supervised by a specialist in the subject. Cooking and sewing are also stressed and are taught in the welfare cottages located near the schoolhouses, with a special director in charge. These cottages are duplicates of those built by the company for its employees and are furnished simply but in good taste with such furnishings as the workmen can afford. They serve as demonstration cottages for the community, as well as classrooms for the children. Schoolhouses are built by the company and fitted into the scheme of landscape artistry adopted. Sites are carefully selected. The architecture harmonizes with the village scheme, to which the schoolhouse and grounds often add the finishing touch. Buildings are particularly attractive and conform to the best modern ideas of school architecture, both outside and inside. The grounds are laid out with trees, shrubbery, school gardens, inclosed tennis and basket-ball courts, and other equipment for recreation. The majority of the buildings visited have auditoriums, cloakrooms, supply closets, and other school conveniences. There are adjustable desks, supplementary reading material, and good working equipment in all schools.

The school housekeeping and general upkeep are worthy of special notice and may well serve as a model for other schools in and out of the county. Janitors are furnished in all cases, and the work is supervised by the teachers. Floors are clean and well kept. Blackboards and windows are washed with soap and water regularly.

¹² Deffenbaugh, W. S.: Schools in the Bituminous Coal Regions of the Appalachian Mountains, pp. 22-23, 30-31. U. S. Bureau of Education Bulletin, 1920, No. 21.

The walls are decorated in good colors, and the interior of the rooms presents a pleasant appearance.

The salaries furnished by the county for teachers are supplemented sufficiently by the company to enable the superintendent to secure professionally trained and experienced persons. Social work is required by the company, and special stress is placed on personality and fitness for this additional service. The classroom work is of splendid quality. The teaching staff shows good organization, enthusiasm, loyalty, and a high degree of professional spirit. As an example of this, the May Day program of the colored schools held at Westfield, May 3, may be cited. The program consisted of a pageant, introducing setting-up drills, folk dances, and the like. Children marched and drilled with soldierlike perfection. They showed splendid training, all of which was given by the regular teachers—none of whom had had previous experience or training in this kind of work—under the direction of the supervisor of physical education. The interest of the community was shown by an attendance of probably 2,000. The program was carried out without a hitch, and order on the ground was perfect throughout the day.

This is one example of the organization and supervision which prevails throughout the system. As a whole it is an object lesson in efficiency which may well be studied by other mining communities. It shows conclusively what can be done by the expenditure of reasonable funds, business management, and professional service. Conditions are not different in any essentials from those of the surrounding territory. What can be accomplished here can be accomplished elsewhere with similar management and expenditure.

If a private corporation can get value received from the money spent on schools as just described in the added efficiency and happiness of its employees, surely a community, a county, or a State will benefit at least in the same proportion from similar methods in school improvement. These schools demonstrate conclusively that what is advocated in this respect is possible of achievement if sufficient funds are provided; that education is a good business investment; that schools in mining towns can be as good as those in cities; that mining-town people appreciate good schools and good buildings; and that children under trained teachers do good work and are happy in doing it.

Where the mining settlements are small, and sufficiently near each other, the consolidated school offers a solution of many school problems. The only camp included in the present survey which offered any part of a high-school course shared its school with two other settlements.

SCHOOL PROGRESS.

The least that can reasonably be expected of the schools is that they should teach normal children to read and write. In the families visited, however, 71 children 10 years of age and older, approximately 1 in 13, were illiterate. All except 13 of these children had been in school during the term preceding the survey; only 3, however, of the 13 children who had reached the age of 15 without being able to read and write had persisted in attending school.

The children's progress in school had been very slow. Half those who had reached their fourteenth birthday,¹³ for example, had com-

¹³ In the discussion of school progress of children still in school, the ages of the children are as of Sept. 1, 1920. For children who had left school (p. 27), the age at leaving school is considered.

pleted at most only the fifth grade, and it was not at all uncommon to see big boys and girls in their teens in the first and second grades. Of the 181 school children between 14 and 18, usually considered the high-school age, only 8 had entered high school. In fact, two-thirds of all the children in school were from one to eight grades below those considered normal for their years.¹⁴ Obviously, a large proportion of these children could not reach more than the fourth or fifth grade, at best, before reaching the end of the compulsory school period, and it is well known that few children more than a year or two older than their classmates will remain in school unless legally obliged to do so. The percentage of children over-age for their grades is very much larger in the mining camps included in the present study than that reported for children in other mining communities. For example, of 5,634 children between the ages of 5 and 17 attending schools in bituminous coal mining regions studied by the United States Bureau of Education¹⁵ 45 per cent (as contrasted with the 67 per cent found in this study) were retarded, a proportion that has been characterized by the United States Bureau of Education as "excessive"; among children 13 to 16 years of age in an anthracite mining community surveyed by the Children's Bureau, 35 per cent had not reached grades considered normal for their ages.

TABLE VI.—Retardation of children between 8 and 18 years of age still in school, by age^a of child.

Age. ^a	Children between 8 and 18 years of age still in school.							
	Total.	Retarded.				Normal.	Ad- vanced.	Not reported.
		Total.	1 year.	2 years.	3 years and over.			
Total.....	721	483	172	131	180	213	17	8
8 years, under 9.....	103	26	26	.....	.....	71	4	2
9 years, under 10.....	85	49	41	8	.....	33	3	.....
10 years, under 11.....	89	61	27	26	8	25	3	.....
11 years, under 12.....	93	64	25	19	20	26	2	1
12 years, under 13.....	90	63	17	19	27	25	2	.....
13 years, under 14.....	80	68	10	24	34	11	.....	1
14 years, under 15.....	66	48	11	15	22	14	2	2
15 years, under 16.....	64	59	11	14	34	4	.....	1
16 years, under 17.....	36	32	4	4	24	3	1	.....
17 years, under 18.....	15	13	.....	2	11	1	.....	1

^a Age as of Sept. 1, 1920.

¹⁴ A child who is 6 or 7 on entering the first grade, 7 or 8 on entering the second, 8 or 9 on entering the third, and so on, is regarded as being in a grade normal for his age.

¹⁵ Deffenbaugh, W. S.: Schools in the Bituminous Coal Regions of the Appalachian Mountains, p. 9. U. S. Bureau of Education Bulletin, 1920, No. 21.

TABLE VII.—*Retardation of children between 8 and 18 years of age still in school, by color and nativity of chief breadwinner.*

Retardation.	Children between 8 and 18 years of age still in school.									
	Total.		Color and nativity of chief breadwinner.						Not reported. ¹	No chief breadwinner. ¹
			Native white.		Foreign-born white.		Negro.			
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.		
Total.....	721	100.0	451	100.0	90	100.0	174	100.0	3	3
Retarded.....	483	67.0	300	66.5	55	61.1	123	70.7	2	3
1 year.....	172	23.9	112	24.8	26	28.9	34	19.5		
2 years.....	131	18.2	77	17.1	15	16.7	38	21.8		1
3 years and over.....	180	25.0	111	24.6	14	15.6	51	29.3		2
Normal.....	213	29.5	133	29.5	31	34.4	48	27.6	1	
Advanced.....	17	2.4	12	2.7	2	2.2	3	1.7		
Not reported.....	8	1.1	6	1.3	2	2.2				

¹ Per cent distribution not shown where base is less than 50.

The children of the bituminous coal miners in the communities studied are at a special disadvantage in their school work because of the frequent moving from camp to camp which characterizes the workers engaged in the industry in West Virginia.¹⁶ A smaller amount of retardation was found among children whose parents had moved on an average less than once in three years than among those whose parents had moved once in three years or oftener; and the smallest amount was found among children whose parents had not moved at all during the lifetime of the children. Another factor contributing to slow progress in school is doubtless the comparatively low cultural level of the families included in the study as represented by the rate of illiteracy among them; thus 12.5 per cent of the mothers and 13.6 per cent of the fathers or other heads of households were unable to read and write, as compared with 8.2 per cent of the population of West Virginia 21 years of age and over.¹⁷ But the principal reasons for the large proportion of children in these mining communities who had failed to reach standard grades are, without doubt, to be found in school conditions—the short terms and poor attendance, overcrowded rooms, inexperienced teachers, and inadequate equipment offering serious obstacles to normal progress.

SCHOOL LEAVING.

In spite of the tendency shown by the children in the West Virginia mining communities to remain in school well into their teens, 111 children between the ages of 12 and 18 in the families visited had

¹⁶ See p. 7.

¹⁷ Fourteenth Census of the United States, 1920. Vol. III, p. 1102.

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definitely left school. Of these, 30 had left before reaching their fourteenth birthday, 8 under 11 years of age; on the other hand, 43 had remained in school from one to three years longer than the law required. Proportionately more girls than boys had left school at 14 or earlier, probably because the girls could be useful at home helping with the housework and taking care of the babies, whereas boys could do little or nothing until they were old enough to work in the mines. A few children had left before the end of the compulsory school period because their earnings were needed by the family, a few because the school was too far from their homes, or because there was no school or no teacher. Others had left merely because they disliked school, and two 13-year-old girls had abandoned the schoolroom for the purpose of getting married.

Children in the less prosperous families tended to leave school at earlier ages than those whose families were in more comfortable circumstances. While it is possible that in the poorer families the standards of education desired for the children were lower and the ambitions of the children themselves more easily satisfied, financial reasons, no doubt, played an influential part in early school leaving in these families. Thus, in the group of families in which the heads of households, a few of whom were widowed mothers, had each earned during the schedule year less than \$850, about one-fifth of the children had left school. In no other income group was the proportion of children who had left school so large. After the income of the chief breadwinner of the family reached \$1,450, a perceptible drop occurred in the proportion of children leaving school at early ages; among the families in which the income was \$1,850 or over, every child had remained in school until he was at least 14 years of age.

TABLE VIII.—Age at leaving school, by annual earnings of chief breadwinner.

Age at leaving school.	Children between 7 and 18 years of age who had left school.										
	Total.	Per cent distribution.	Annual earnings of chief breadwinner.								No chief breadwinner. ¹
			Less than \$350.	\$350, less than \$1,050.	\$1,050, less than \$1,250.	\$1,250, less than \$1,450.	\$1,450, less than \$1,850.	\$1,850 and over.	Not reported.		
Total.....	111	100.0	19	10	14	14	18	8	19	9	
Under 11 years.....	8	7.2	3	1	.....	1	.....	.....	3	.....
11 years, under 12....	5	4.5	2	1	1	.....	1	.....	.....	.....
12 years, under 13....	4	3.6	.....	.....	1	2	.....	.....	.....	1
13 years, under 14....	13	11.7	3	2	1	1	1	.....	3	2
14 years, under 15....	24	21.6	4	.....	5	5	2	2	4	2
15 years, under 16....	27	24.3	5	4	3	.....	5	4	4	2
16 years, under 17....	14	12.9	.....	2	2	2	5	.....	1	2
17 years, under 18....	2	1.8	.....	.....	.....	1	.....	1	.....	.....
Not reported.....	14	12.6	2	.....	1	2	4	1	4	.....

¹ Including children in families in which there was no chief breadwinner for part of year.

The part played by family need in causing children to leave school may perhaps be indicated by the frequency with which going to work was given as the chief reason for leaving school. In the families having no chief breadwinner or one who had earned less than \$1,250 a year, 22 out of the 45 children who had left school had left to go to work; whereas only 9 of the 40 children leaving school in households whose heads had earned \$1,250 or more had left in order that they might work.

Going to work was the reason for leaving school given by most of the boys; to help at home was the reason most commonly given by the girls. Two-thirds of the boys leaving school had left to go to work, whereas only 6 per cent of the girls gave going to work as their chief reason for leaving. Relatively more colored children than children in white families with either native or foreign-born fathers had left school for work. Dissatisfaction with school as the chief reason for leaving was, strangely enough, given by a much larger proportion of girls than of boys, but "going to work" was probably only an excuse with many boys to escape from the irksomeness and boredom of the schoolroom. Possibly, on the other hand, the adolescent girls found the unattractiveness of the schools, the poor sanitary arrangements, and the meager equipment harder to bear than did their brothers.

In fact, several girls were very scornful in their comments on the schools, one 15-year-old girl saying that her friends would not attend because the school was in such a bad condition. Dissatisfaction with school as the chief reason for leaving was confined almost exclusively to white children of native fathers. More girls than boys left school because of the fact that the nearest schoolhouse was in another camp or too far from their homes. Possibly the dangers involved for girls in walking the lonely roads may account in part for this.



A SCHOOL PRIVY—DRY,
OPEN-BACK TYPE.

30 CHILDREN IN COAL MINING COMMUNITIES, WEST VIRGINIA.

TABLE IX.—Reason for leaving school, by annual earnings of chief breadwinner and sex of child.

Reason for leaving school, and sex of child.	Children between 7 and 18 years of age who had left school.										
	Total.	Per cent distribution. ¹	Annual earnings of chief breadwinner.								No chief breadwinner. ²
			Less than \$850.	\$850, less than \$1,050.	\$1,050, less than \$1,250.	\$1,250, less than \$1,450.	\$1,450, less than \$1,850.	\$1,850, and over.	Not reported.		
Both sexes.....	111	100.0	19	10	14	14	18	8	19	9	
Went to work.....	42	37.8	9	5	6	4	3	2	8	5	
Needed at home.....	19	17.1	2	3	3	4	6	1	1	.....
Ill health.....	6	5.4	2	2	.....	1	1	.....	.....	.....
No school, or school too far.....	6	5.4	.....	.....	.....	.....	.....	2	.....	1
Dissatisfied with school.....	9	8.1	.....	.....	1	3	3	.....	1	1
All other reasons.....	20	18.0	3	.....	1	2	3	2	7	2
Reason not reported.....	9	8.1	3	.....	1	.....	2	1	2	.....
Boys.....	59	100.0	11	6	7	5	8	5	13	4	
Went to work.....	39	66.1	7	5	6	4	3	2	8	4	
Ill health.....	2	3.4	.....	1	.....	.....	1	.....	.....	.....
No school, or school too far.....	1	1.7	.....	.....	.....	.....	.....	1	.....	.....
Dissatisfied with school.....	3	5.1	.....	.....	.....	1	1	.....	1	.....
All other reasons.....	8	13.6	2	.....	.....	.....	2	2	2	.....
Reason not reported.....	6	10.2	2	.....	1	.....	1	.....	2	.....
Girls.....	52	.....	.....	4	7	9	10	3	6	5
Went to work.....	3	.....	2	.....	.....	.....	.....	.....	.....	1
Needed at home.....	19	.....	2	3	3	4	6	.....	1	.....
Ill health.....	4	.....	.....	1	2	.....	.....	1	.....	.....
No school, or school too far.....	5	.....	2	.....	.....	1	.....	.....	.....	1
Dissatisfied with school.....	6	.....	.....	.....	1	2	2	.....	.....	1
All other reasons.....	12	.....	1	.....	1	2	1	.....	5	2
Reason not reported.....	3	.....	1	.....	.....	.....	1	1	.....	.....

¹ Not shown where base is less than 50.

² Including children in families in which there was no chief breadwinner for part of the year.

Even children who are not obliged by poverty or other circumstances at home to leave school as soon as the law permits are more likely, of course, to leave at the earliest possible moment if they are older than the children in their grade, or if they have been obliged to repeat the same school work year after year. Doubtless many of the children who said that they had left school for the purpose of going to work or to help at home might have remained in school if they had not become discouraged by repeated failures and slow progress. The discipline and work of the lower elementary grades is unfitted to the needs of a child of 14 or 15 years even if he has not demonstrated his ability to do school work of a higher grade. It requires a faith in the benefits of elementary education which the average parent does not possess, to say nothing of a strong parental hand, to keep children in school under these circumstances. The oft-repeated statement that the more retarded children tend to drop out of school at the earliest possible moment is supported by the facts in the case of the children leaving school in the West Virginia mining camps. Of the 111 children between 8 and 18 years

of age who had left school, only 16 per cent had been in grades that were normal or advanced for their ages, as compared with 32 per cent of those who had stayed in school. (This difference may be partly explained by the higher proportions of older children in the former group.) Of 42 children for whom records were available who had left school to go to work, 30 were retarded; of 19 who were "needed at home," 9 were retarded; of the 6 who mentioned ill health as the chief reason for leaving school, only 1 was in the standard grade for her age; of the 9 so dissatisfied with school that they had left, all were retarded; of the 6 who had left because the schoolhouse was too far from their homes, 3 were retarded, 2 in average grade, and 1 two years advanced. This child was the only one who had made more than normal progress in school who had not continued to attend. Naturally, children who are retarded 3 or 4 years or more leave school markedly ill-equipped, even though they may have remained in school until they are 14, 15, 16, or even 17 years of age. Almost all left with less than the elementary education which a child of 14 is supposed to have acquired. Of the 92 children reporting the grade which they had completed before leaving school, only 8 had completed the eighth grade; almost three-fourths had left school at or before the completion of the sixth grade, the largest number after completing the fourth grade. Five children had never gone beyond the first grade; and 13, or about 1 in every 9 of those leaving school, were unable to read and write. Only 1 of these 13 children said that he had left school to go to work, indicating that it was not economic necessity that was chiefly responsible for their starting out in the world illiterate. Only 1 child among those who had left school had ever attended high school.

TABLE X.—Retardation of children between 12 and 18 years of age who had left school, by age at leaving school.

Age at leaving school.	Children between 12 and 18 years of age who had left school. ¹							
	Total.	Retarded.			Normal.	Ad- vanced.	Not re- ported.	
		Total.	1 year.	2 years.				3 years and over.
Total.....	² 110	70	11	24	35	17	1	22
8 years, under 9.....	1					1		
9 years, under 10.....	3	1		1		1		1
10 years, under 11.....	3	1	1			1	1	
11 years, under 12.....	5	2	1		1	2		1
12 years, under 13.....	4	3		2	1	1		
13 years, under 14.....	13	10	1	6	3	3		
14 years, under 15.....	24	18	2	5	11	5		1
15 years, under 16.....	27	20	2	7	11	3		4
16 years, under 17.....	14	13	3	2	8			1
17 years, under 18.....	2	2	1	1				
Not reported.....	14							14

¹ No children who were under 12 at the time of the study had left school.

² Excluding 1 child who was only 7 years of age at leaving school.

CHILDREN AT WORK.

In the average industrial town the child of 14 or 15 who seeks employment is usually limited in his choice of work to that which requires little or no skill, offers no future in itself, and provides no training for a more responsible position; nevertheless if he is willing to run errands, carry messages, or do simple mechanical tasks in store or factory he need seldom be without a job. The mountain coal camp of the bituminous field, on the other hand, has few opportunities for work of any kind to offer boys and girls under 16. Mining was practically the sole industry in all the camps covered in this survey, and at the time of the survey a boy could not legally work in the mines in West Virginia until he was 16 years of age.¹ No manufacturing plants had been located in or near any of the settlements to take advantage of the labor supply furnished by the wives and daughters of the miners, as is the case in the older and larger communities of the less isolated anthracite field. A small establishment just outside one of the camps, bottling soft drinks, was the nearest approach to a factory located in the vicinity of any of the settlements; it hired only a few men. In such mining camps the company store, with not more than two or three clerks at the most, gives practically the only opening for a mercantile occupation. Domestic service is but little in demand. The superintendent's wife or the clubhouse manager may hire occasional help, or a housewife with illness in the family may engage a half-grown girl temporarily, but practically all the women do their own housework, even the washing and ironing, unassisted. After her meager school days are over there is little for the girl to do until she marries except to "help around the house"; while for the boy, even after he has reached the age of 16, the future holds practically nothing but the mine.

For these reasons, the problem of child employment in the bituminous mining camps is not an important one numerically. Only 153 children under 18 years of age in all 11 camps had ever done any paid work; 84 of these had worked only after school and during vacations, so that only 69 children had had regular full-time employment. These children represent but 10.7 per cent of the children between 10 and 18 and only 3 per cent of those between 10 and 16 included in the survey; contrasted with the latter figure is the 8.5 per cent given in the census of 1920² as the proportion of children

¹ West Virginia Acts of 1919, ch. 17, sec. 2.

² Occupations of Children, 1920, p. 5. U. S. Bureau of the Census, Washington, 1922.

between 10 and 16 years of age gainfully employed in the country as a whole. In Connecticut and Massachusetts, States whose diversified industries probably favor early wage earning, 24.8 and 26.4 per cent, respectively, of all the 14- and 15-year-old children were gainfully employed in 1920.³ In 1915-16, in Boston, a city with large commercial and business, as well as industrial, interests, nearly three-tenths of the child population were becoming regular workers before their sixteenth birthday.⁴ Of the children of these ages in the bituminous mining camps, only 8 per cent had begun regular work. More nearly comparable to the West Virginia settlements in opportunity for employment, perhaps, are the mining towns of the anthracite coal fields, since in the latter as in the former communities life revolves around the coal mines. But in the anthracite mining region with its coal-breakers and near-by factories, opportunities are not so restricted as in the isolated mountain camp. Thus, in the Shenandoah anthracite mining district of Pennsylvania, previously studied by the Children's Bureau, 46 per cent of the 14- and 15-year-old boys and girls had begun regular work,⁵ more than five times as many proportionately as had gone to work in the bituminous mining camps. Even when 16-year-old children, as well as those 14 and 15 years of age, are included, 70 per cent of the boys and 39 per cent of the girls in the Shenandoah district had begun regular work, as compared with only 29 per cent of the boys and only 8 per cent of the girls of these ages included in the present study.

Although 69 children under the age of 18 years had definitely left school to engage, if only for a brief period, in some regular occupation, at the time of the survey only 55 boys and girls were actually employed at regular full-time work. Only one of these children was less than 14 years of age—a 12-year-old boy assisting his father in timber cutting, regarded as an agricultural pursuit and hence exempt from the provisions of the State child labor law; only 2 others—both illegally employed in the mining industry—were as young as 14.

During the years in which the working children of the present study were beginning their industrial life (approximately 1913 to 1920), legislation, either State or Federal or both, regulating the employment of children under 16, was in effect.

The West Virginia child labor law, as amended in 1915,⁶ forbade the employment of children under 14 in factories, and of boys under 16 and girls of any age in coal mines,⁷ except during the period when

³ From figures furnished by courtesy of the U. S. Bureau of the Census.

⁴ Woodbury, Helen Sumner: *The Working Children of Boston*, pp. 13-14 U. S. Children's Bureau Publication No. 89, Washington, 1922.

⁵ *Child Labor and the Welfare of Children in an Anthracite Coal-Mining District*, p. 14. U. S. Children's Bureau Publication No. 106.

⁶ West Virginia, Hogg's Code 1913, ch. 15§§ secs. 469, 470, 485, 495 (all as amended by acts of 1915, ch. 10); secs. 530-533; West Virginia Acts of 1915, ch. 10, sec. 33.

⁷ Application of law limited to coal mines in which five or more persons were employed in a 24-hour period.

school was not in session, when boys of 14 might work in coal mines. Enforcement was especially defective in respect to work in mines, inasmuch as the law did not require the same employment certificate as for factory work, but only the parents' affidavit as to the age of a child seeking work. Federal legislation, however, beginning September 1, 1917, afforded boys in mining towns a somewhat greater measure of protection than that provided by the State law: The first Federal child labor law⁸ in effect forbade the employment of any child under 16 at any time not only in but also around mines. But when this law was declared unconstitutional in June, 1918, West Virginia boys were again permitted to enter the mines at the age of 14, during summer vacations. By the time the Federal child labor tax law became effective (April 25, 1919), imposing a tax of 10 per cent on the net profits of any mine employing children under the age of 16,⁹ a new State child labor law had been enacted (in effect May 11, 1919), prohibiting the employment of any child under 14 in any gainful occupation except agriculture and domestic service or of any child under 16 in mines,¹⁰ and containing excellent provisions with respect to employment certificates.¹¹ The influence of legislation was no doubt the principal factor in reducing the number of boys under 16 working in mines in West Virginia by 75 per cent during the decade 1910-1920, although the number of persons of all ages engaged in mining in the State increased in this period by 75 per cent.¹²

VACATION AND AFTER-SCHOOL WORKERS.

Some children in the mining communities, as everywhere, begin their industrial experience by doing odd jobs before and after school hours and on Saturdays, and by working during vacations, though such work is less common among children in the mining settlements than it is among those of the ordinary industrial town, owing to the fact that even temporary work is scarce. Not including any regular workers, some of whom had worked out of school hours before taking a full-time position, 84 children—about one-eighth of all the children between 10 and 18 years of age—had held from one to five after-school or vacation jobs. Only 21 of these children had ever done any work during the months when school was in session. These after-school jobs consisted for boys in carrying wood or water for neighbors, selling or delivering papers, and blacking boots; girls did housework

⁸ The law prohibited the shipment in interstate commerce of the product of any mine in which, within 30 days prior to the removal of said product, children under 16 had been employed (39 Stat. 675).

⁹ 40 Stat. L. 1138 declared unconstitutional by the U. S. Supreme Court, May 15, 1922.

¹⁰ Since the Federal child labor tax law was declared unconstitutional (May 15, 1922) the work of children under 16 on or about coal tipples, on or about tracks between the drift mouth and head-house or tipple, or places where mine cars are switched or moved by power-driven machinery, or where trips of cars are made up, has been prohibited under a ruling of the State Commissioner of Labor, the State Commissioner of Health, and the State Superintendent of Schools.

¹¹ West Virginia Acts of 1919, ch. 17. The law also exempted boys 12 years of age or over employed on special permit in mercantile establishments and business offices outside school hours.

¹² Computed from *Occupations of Children, 1920*, pp. 10, 11. U. S. Bureau of the Census, Washington, 1922.

or cared for children, as a rule, but one girl had a paper route and another tended a soda fountain. All except 2 of the 84 children had done vacation work. The first vacation job reported by over two-fifths of the 52 boys had been in the mining industry. The proportion of vacation workers working in and around the mines was much smaller than that of the regular workers. More boys were occupied during vacations with a variety of odd jobs, such as doing chores about the town, carrying papers, delivering groceries, and carrying water for road builders; but 1 boy had worked steadily on a farm and another had been a railroad section hand. Of the 32 girls reporting vacation jobs, 24 had done housework or cared for babies; of the remaining 8, 3 had worked outside the mining community, 2 in a five-and-ten-cent store, the other in a laundry; 1 other had been a salesgirl; 1 had done errands for a lumber company, and 3 had had newspaper routes.

Most of the temporary workers were at the time of the survey at least 14 years old, though 25 were between 10 and 14. At the time of the survey, in the summer of 1920, only 42 children were actually vacation workers, 14 of whom were under 14 years of age. Most of the children under 14 years of age did part-time work, such as serving papers, running errands, or doing chores or housework; but one 11-year-old boy was carrying water for a road gang, and another boy, aged 13 years, was loading coal within the mines. Of 16 children employed for vacation work in or around the mines at the time of the survey, 5 had not yet reached their sixteenth birthday, though in the summer of 1920 the State law forbade employment in mines below that age, and the Federal child labor tax law in effect prohibited work both in and around mines. Three of the 5 boys under 16 years of age worked underground.

Many children—35 of the 84 who had done vacation or after-school work but had held no regular positions—had taken jobs in order to earn spending money; but almost as many (27) had wanted something to keep them busy during vacation, or had wanted to "try their hand" at a job or had been urged to do so either by an outsider who was anxious to get some work done or by a parent who wished his child to "learn something," earn a little money, and "keep out of mischief"—for which the six months' vacation customary in the mining districts offered abundant opportunity. Two high-school boys, 16 and 17 years of age, were working in the mines in order to earn money to continue their education. Twenty children—about one-fourth—said that they worked during vacation in order to help out at home; more than half those who did vacation work because their earnings were needed by the family were children whose fathers had earned less than \$1,050 during the schedule year or whose fathers were dead. Eight per cent of all the children 10

36 CHILDREN IN COAL MINING COMMUNITIES, WEST VIRGINIA.

years of age or over in families whose chief breadwinner had earned less than \$1,050, reported that their chief reason for working during vacation was that their families needed their earnings; whereas only 4 per cent of the children of the same ages in families in which the breadwinner's income had been between \$1,050 and \$1,450, and less than one-half of 1 per cent of the children in families in which the breadwinner had earned at least \$1,450, said that they had done vacation work because of actual need.

TABLE XI.—Reason for going to work given by vacation and after-school workers, by earnings of chief breadwinner.

Annual earnings of chief breadwinner.	Children working after school and during vacations.						
	Total.	Reason for going to work.					
		Family need.	Spending money.	To be occupied during vacation.	Wanted to work.	Instigation of others.	Not reported.
Total.....	84	20	35	11	4	12	2
Less than \$50.....	7	4	1			2	
\$50, less than \$1,050.....	11	7	2			1	1
\$1,050, less than \$1,250.....	10	3	4		1	2	
\$1,250, less than \$1,450.....	10	2	4	2		2	
\$1,450, less than \$1,850.....	19		9	6	1	2	1
\$1,850, less than \$2,250.....	7		5	2			
\$2,250, less than \$2,850.....	2	1	1				
\$2,850, less than \$3,450.....	2		2				
\$3,450 and over.....	2		2				
Not reported.....	13	2	5	1	2	3	
No chief breadwinner.....	1	1					

Only 8 children were able to give the amount of their after-school and vacation earnings for a year, and these varied widely: A boot-black and a water carrier had each made \$10; a 15-year-old girl doing laundry work throughout the year and serving a paper route for 9 months, in addition to 3 or 4 weeks' housework during vacation, had earned \$665; a 14-year-old railroad section hand had received about \$80 for his month's work during the summer; a boy of 16 who had worked for a building contractor for 2 months, driven a wagon for the company store for 3 months, and acted as school janitor during the 6 months that school was in session, had made \$338; other children who had run errands and served newspapers had made from \$100 to \$145. None of the boys working in the mines reported their total earnings from vacation work. Most of them were paid at a daily rate, which for trapper boys, who constituted the majority of the boy mine workers, was about \$3.

All except 3 of the temporary workers were still in school. Three girls had left, one 17-year-old girl because, she said, the school was "not fit to go to"; another girl aged 14 because "there was so much work to do at home." Of the children still in school, 66 (81 per cent) had failed to reach standard grades for their ages.

REGULAR WORKERS.

Of the 69 regular workers only 14 were girls. Nine of them had entered some type of domestic service, and of the remaining 5 all had found their first work outside the mining community, usually in factories, either before moving to their present home or on leaving home for the purpose of finding work. Only one of these girls was at work at the time of the survey. Of the 9 girls who had begun as domestic workers, 4 had married before reaching the age of 17 and were no longer gainfully employed. Thus in the summer of 1920 only 5 girls in all 11 mining camps, excluding those who were working only during vacation, were actually employed at full-time work. Although this work is termed "regular" in order to distinguish it from the work done by children only during vacation and outside school hours, it was by no means regular in the ordinary sense of the word, as the accounts of the working lives of individual children given on pages 44-46 indicate.

TABLE XII.—Occupation in first regular position, by age at beginning regular work.

Occupation in first regular position.	Children between 7 and 18 years of age who had worked regularly.							
	Total.	Age at beginning regular work.						Not reported.
		10 yrs., under 12.	12 yrs., under 14.	14 yrs., under 15.	15 yrs., under 16.	16 yrs., under 17.	17 yrs., under 18.	
Total.....	69	4	7	16	13	11	5	13
Mining occupations:								
Laborer, surface.....	6			2	1		2	1
Laborer, underground.....	8	1	1		2			3
Rodman.....	1						1	
Trackman.....	1						1	
Trip rider.....	4					2		1
Trapper.....	24		4	11	5	3		1
Other occupations:								
Agriculture and forestry.....	1	1						
Clerical.....	1					1		
Domestic and personal service.....	9	1	1	2	2	1	1	1
Manufacturing and mechanical.....	7	1		1	2	2		1
Professional.....	1							1
Trade.....	1					1		
Transportation.....	1		1					
Not reported.....	4							4

Just as the girls find nothing to do aside from housework, so their brothers when the time comes for them to work must turn to the mine. Of the 55 boys who had begun regular work, 44 had found their first work in the mining industry. The others had been variously employed: One, for example, had become a carpenter's assistant, another had helped a roofer, a third was a clerk in the company store. Two other boys had first gone to work before the family had moved to the mining camp, one in a tobacco factory, the other in a printing office.

As has been said, there are no breakers at the surface of the bituminous mines, such as absorb most of the boy labor in anthracite districts. Hence, the boys who go to work in the West Virginia mines are chiefly underground workers. The majority (24) of the 44 boys included in the present study whose first regular work had been in or about the mines were "trappers," sitting or standing all day in the darkness opening and closing the doors which regulate mine ventilation in order to allow the coal cars as they came along the tracks to pass through; others were trip riders, couplers, or other underground laborers. Only 6 of the 44 boys who had first gone to work in the mining industry were surface workers. A majority (28) were under 16 years of age when beginning regular work in the mines; 9 were 15, 13 were 14, 5 were 13, 1 was only 10 years of age. At the time of the survey five 14- and 15-year-old boys were at work inside the mines. Although some of the boys who had entered the mines before the age of 16 had entered at a time when neither Federal nor State law forbade work in mines under the age of 16, at least 18¹³ of the 28 had gone to work illegally. Some of the 18 had begun work when the State law required only the parents' affidavit that the boy was 16, or, during the period when school was not in session, that he was 14.

The present State child labor law, which since the Federal child labor tax law was declared unconstitutional is now the only protection offered children going to work in the mines, requires the same certificate for mine work as for other employment; but under the present law, as under the former one, inspection is in the hands of the State mine inspectors. The intention of the law is clearly to protect children under 16 from the hazards of underground work; the real problem in West Virginia, as in the 28 other States having this standard and in the 4 having a higher standard for work in mines, is one of enforcement. On the inadequacy of enforcement by mine inspectors the Children's Bureau has previously commented.¹⁴ "The mine inspector is, in theory, at least, especially trained for the highly technical work of safety inspections * * *. Most of the time of a child labor inspector must be spent, not inside mines and factories, but in outside investigation of the ages of the children. It is quite wasteful of the skill of a safety engineer to plan that he shall spend time in visits to certificating offices, homes, health departments, etc., in order to establish the age of a child. That most mine inspectors will not give the necessary time for this work is to be expected."

The hazards of underground work are well known. Every year hundreds of deaths, and thousands of accidents of a nonfatal but more

¹³ Assuming the school session to be October to March, inclusive.

¹⁴ Administration of the First Federal Child-Labor Law, p. 82. U. S. Children's Bureau Publication No. 78. Washington, 1921.

or less serious nature, are caused by falling slate, rock, and coal; gas, powder, and shot explosions; charged wires, mine cars, and locomotives; and cave-ins and fallen supports. In the coal fields of West Virginia alone 1,895 men were killed in the mines in the five-year period 1916-1920, approximately 1 of every 225 workers.¹⁵

Of 52 boys who had at some time worked regularly in a mining occupation, 10 had sustained some injury while at work, and 1 boy had been twice injured. Four of the boys were under the age of 16 when the accident occurred, and at least 2 of them were working illegally. The accidents reported by the boys had incapacitated them for from one to seven weeks. The injuries included split fingers, bruised, lacerated, and burned legs, injured knees, injured backs, broken limbs, and hernia. Only 4 of the 10 injured children had received compensation, according to statements made by the boys' families, although all except one boy had been disabled for at least eight days, the minimum period specified in the West Virginia workmen's compensation act as entitling an injured employee to compensation.¹⁶ One 14-year-old boy working illegally as a miner's loader had suffered an injury to his back due to a fall of slate. He had been incapacitated for six weeks but had received no compensation. Another boy, aged 16, a trip rider in the mines, had been thrown from his car, breaking his leg; although he had been incapacitated for seven weeks he had received no compensation. The amounts paid in the 4 cases receiving compensation ranged from \$7.98 paid to a 15-year-old coupler, working illegally, who had been run over by a motor and disabled for four weeks, to \$25 paid to another coupler, aged 16, whose leg had been burned, incapacitating him for three weeks. An attempt to safeguard children against illegal employment in dangerous occupations has been sought in one State—Wisconsin—through a provision of the workmen's compensation law, requiring treble compensation to be paid in the case of minors illegally employed, and making the employer primarily liable for the additional amount.¹⁷

In general, during the early years of industrial life children are likely to change from one position to another until they have become adjusted to the discipline of work. Thus, it is quite common for children who have been at work only a few months to have held several positions and to have had longer or shorter periods of unemployment. In addition to the industrial restlessness which characterizes the average untrained young worker, the nature of the only work open to the boys and girls of the small isolated mining towns results in considerable enforced idleness. Of the 35 children who had been regular workers for at least one year, 5 had each held but one position; on

¹⁵ West Virginia Department of Mines, Annual Report, 1920, pp. 16, 344.

¹⁶ See p. 69.

¹⁷ Wisconsin Statutes, secs. 2394-7, 2394-9 (7), 2394-9 (8).

the other hand, 29 had each held from two to six jobs, for the most part in the same industry.¹⁸ In mining, the boys, like the men, must suffer periods of enforced idleness;¹⁹ in the casual housework open to the girls a few days' work is often succeeded by weeks and even months of involuntary unemployment. Only 4 children reported that they had worked without loss of time throughout the year; while 31 of the children at work at least a year had had some unemployment, the periods reported being from 15 to 193 days.

In the mining industry the standard working day for boys as well as men was eight hours. A few boys had done occasional overtime work during the year, but practically all these were over 16 years of age and so did not come under the maximum hours provision of the State child labor law or Federal child labor tax law. These laws fixed a maximum eight-hour day—the State law for all occupations except agricultural pursuits and domestic service, the Federal law for factories; and both prohibited any employment of children under 16 in mines. As would be expected, girls doing housework reported long hours. Few States have attempted to regulate the hours of work in domestic service, even by implication, and the West Virginia child labor law specifically exempts such work from its provisions.

Few of the children employed were able to state the amount of the wages which they had received. Twenty-one boys engaged in mining occupations during the year preceding the inquiry reported that they had earned from \$102 to \$2,000. The boy earning the first amount was a 16-year-old teamster for a mining company, who had been employed as a teamster "off and on" for three years; the latter amount, the largest earned by any of the workers, was received by a 17-year-old boy who worked as a wireman, a skilled occupation. Of the 21 boys, 16 had earned at least \$850. No worker outside the mining industry reported earnings amounting to as much as \$1,050, though 3 had earned between \$850 and \$1,050. Two girls in domestic service reported that they had received \$216 and \$260, respectively, for their year's work, and one 17-year-old waitress in a restaurant, whose weekly wage had been \$10, estimated that in wages, board, and tips she had received during the year approximately \$800. Five dollars a week and board was the usual rate paid girls in domestic service.

Wages received by boys who enter the mines are sufficiently large to seem of very great importance in many of the families, especially in those where the father is dead. Although a miner's widow, unless she has a son working in the mines to justify her occupying one of the company houses, is likely to move away from the mining community soon after the death of her husband, nevertheless 51 families,

¹⁸ One boy did not report the number of positions held.

¹⁹ See p. 67.

8 per cent of the total included in the survey, had lost the father by death. That the death of the father plays an important part in sending the boys and girls to work is indicated by the fact that of the 69 regular workers 14, or one-fifth, were fatherless,²⁰ whereas according to average mortality rates only 10.4 per cent of them would have lost their fathers by death.²¹

The compensation law of West Virginia in effect at the time of this study allowed the widow \$20 a month until death or remarriage, and in addition \$5 per month for each child under 15 years of age, to be paid until the child reached the age of 15.²²

Under the mothers' pension law of West Virginia, no mother receiving benefits from the compensation act was entitled to relief;²³ other widows with children under the age of 13 might receive a maximum of \$25 a month under that law provided they had lived two years in the county in which they applied for the pension. The miner's widow, however, is likely to benefit little if any from the mothers' pension law. Inasmuch as it is difficult for her to find work in the mining community, and as she can not support her family on the \$25 which is the maximum allowed under the law, she is obliged to move from the mining town; and if her new residence is in a different county two years must elapse before she becomes eligible to the pension. Only one of the widowed mothers in the present study reported that she was receiving a mother's pension. Several, however, were in receipt of benefits under the compensation act.

TABLE XIII.—Reason for going to work given by regular workers, by age at beginning regular work.

Reason for going to work.	Children between 7 and 18 years of age who had worked regularly.							
	Total.	Age at beginning regular work.						Not reported.
		10 years, under 12	12 years, under 14	14 years, under 15	15 years, under 16	16 years, under 17	17 years, under 18	
Total.....	69	4	7	16	13	11	5	13
Family need.....	32	1	4	7	6	6	2	6
Spending money.....	10	1	.....	1	4	1	1	2
Inadequacy and unattractiveness of school.....	8	2	.....	3	1	2	.....	.....
Through with school.....	5	.....	1	3	.....	1	.....	.....
Wanted to work.....	6	.....	1	2	1	1	.....	1
Instigation of others.....	2	.....	1	.....	.....	.....	1	.....
Not reported.....	6	.....	.....	.....	1	.....	1	4

²⁰ Fathers of 5 of the 14 had been killed in the mines.

²¹ Estimated from the mortality during periods corresponding to the ages of the children (10 to 17 years) given for males aged 30 in the U. S. Life Tables, 1910. The estimate is purposely slightly overstated in assuming a rather high average age of fathers at the births of their children and in assuming that the mortality of males applies to married males.

²² West Virginia Acts of 1913, ch. 10 (as amended by acts of 1915, ch. 9, and acts of 1915, first extra session, ch. 1), sec. 33 (as amended by acts of 1919, ch. 131).

²³ West Virginia Acts of 1917, ch. 46, sec. 11.

Thirty-two of the 69 working children in the families interviewed—13 of whom were fatherless²⁴—gave family need as their chief reason for having gone to work. Of the 44 working children in families in which the chief breadwinner's income had been less than \$1,450, or in which there had been no chief breadwinner during at least a part of the year, 24 said that they had gone to work because their wages were needed at home; whereas of the 11 working children in families reporting that the chief breadwinner had earned at least \$1,450, only 2 children had been driven to work by the need of helping support themselves or their families. Certainly, children of families in the lower income groups showed a greater tendency to go to work, for whatever cause, than did those in families in which the father's wage was more nearly adequate to support a family. Thus, of 287 children aged 10 years or more in families whose head had earned less than \$1,450 during the schedule year, 24, or 8 per cent, had gone to work; whereas of 229 children of the same ages in households whose heads had earned \$1,450 or more only 5, or 2 per cent, had gone to work. While poverty may not have been the chief direct cause for going to work on the part of these children, low incomes were certainly at least a contributory cause. Ten children in addition to those who said that their principal purpose in going to work had been to help out at home said that they had gone to work in order to earn "spending money"; in the homes of most of these children also straitened circumstances if not actual want had caused them to become wage earners, though in some cases, no doubt, a lack of appreciation of the benefits of further education had been the chief factor in sending children from school to work, instead of the comparatively trivial reason given by the children.

If the number of children going to work in the mining camps in the districts studied is so small as not to constitute a very serious situation, the lack of education of the children who go to work is deplorable. The United States has been called a "nation of sixth graders" because of the large proportion of children who stop school upon completing the sixth grade. The children of the bituminous mining camps were below this average. Not one of the 57 regular workers who reported the school grade which he had last attended had entered high school; and only 5, or less than one-tenth, had completed even the eighth grade. A large majority had left school before entering the seventh grade, and over half had completed only the fourth or a lower grade before leaving school for work. A few had received insufficient education because of the unusually early age at which they had left school. But even the children who began regular work between the ages of 14 and 18, when it might be supposed that they had completed the eighth grade at least, were

²⁴ Three fathers had been killed in the mines.

singularly ill equipped educationally. No 14-year-old child had gone beyond the sixth grade; of the 10 children 15 years of age reporting grade completed and age at going to work only 3 had gone beyond the sixth, and only 2 had completed the eighth grade; of the 10 children 16 years of age, 1 had finished the seventh and 1 the eighth grade; of the 3 children 17 years of age none had gone beyond the sixth grade. The West Virginia child labor law, as amended in 1919,²⁵ requires all candidates for work permits to have had at least a sixth-grade education. While this provision will doubtless prove beneficial in increasing the amount of schooling received by boys in the mining communities, it is not as likely to raise the standard of education among the girls, inasmuch as most of the latter either do not go to work at all or enter domestic service, for which no employment certificate is required.

TABLE XIV.—*School grade completed by regular workers, by age at beginning regular work.*

School grade completed.	Children between 7 and 18 years of age who had worked regularly.								
	Total.	Age at beginning regular work.							
		10 yrs., under 11.	11 yrs., under 12.	13 yrs., under 14.	14 yrs., under 15.	15 yrs., under 16.	16 yrs., under 17.	17 yrs., under 18.	Not re- ported.
Total.....	69	2	2	7	16	13	11	5	13
None.....	3	1					1		1
First.....	2				1			1	
Second.....	5		1	2			2		
Third.....	6		1	2	2				1
Fourth.....	13			1	6	1	3		1
Fifth.....	7				4	2			1
Sixth.....	12				3	4	2	1	2
Seventh.....	4			2		1	1		
Eighth.....	5					2	1		2
Not reported.....	12	1				3	1	2	5

An improvement in the schools themselves will be an effective means of holding children in school until they have received at least an elementary education. That the schools were not satisfying the boys and girls of the community, and were even a factor in their preferring to take their meager chances at work, is shown by the fact that 8 of the 69 working children mentioned dissatisfaction with school as their chief reason for going to work, and 11 others—making in all 27 per cent of the regular workers—gave as their principal reason what may perhaps amount to the same thing as dissatisfaction with school, namely that they “had wanted to work,” or were “through,” meaning in the latter case that they had completed the highest grade in the local school. In the absence of indus-

²⁵ West Virginia Acts of 1919, ch. 17.

trial and commercial openings to tempt young girls and boys into wage earning, the schools have an unusual opportunity to hold children until they have received not only an elementary education but some prevocational and vocational training as well.

Moreover, in the long and oft-recurring periods of unemployment which many of the young workers know, the schools have not only the opportunity, but also the responsibility, of giving worth-while training. The problem of the unemployed child is, it is true, a difficult one in school administration. The West Virginia school attendance law requires children under 16 to be in school unless they are at work.²⁶ As it affects children under 16, the problem is not so urgent in mining communities; as has been pointed out, a large proportion of the children under 16 do remain in school. In the mining camp, it is the child between 16 and 18 who needs especial attention in this respect. Those children who have left school but are temporarily out of work require special classes to meet their needs, and with the establishment of continuation schools for working children such special classes could be provided.

An amendment²⁷ to the West Virginia education law, passed in 1921, authorizing the establishment of continuation schools, requiring their establishment under certain conditions, and requiring children between 14 and 16 years of age to attend,²⁸ and the possibility of Federal aid under the Smith-Hughes Act, now offer an excellent opportunity for the much-needed vocational training.

How great is the need of solving the problem of the child who is neither at work nor in school is indicated by the fact that of the 111 children who had definitely left school, only 69 had ever done regular work, and only 57 were actually employed at the time of the survey.

The following typical stories of the circumstances under which the children in the mining communities surveyed had gone to work, and the conditions of their work, so far as it was possible to learn about them from the families, present in a very concrete way what the foregoing analysis has attempted to show—the lack of opportunity, the meager background, and the enforced idleness which make up the lot of wage-earning children in the mountain mining camps.

A 17-year-old boy of native white parentage had gone to work as a trapper boy in the mines at the age of 12 during vacation only. At 15 he left school, having completed the eighth grade, and went to work because his family needed his help. In the two years during which he had worked regularly in the mines he had been a coupler, a trip rider, and a motorman. One year before the survey his father had been killed

²⁶ For exemptions, see p. 18, where the law is given in detail.

²⁷ West Virginia Acts of 1921, ch. 4 (amending and reenacting acts of 1919, ch. 2, sec. 129).

²⁸ Children required to attend when schools are established are those between 14 and 16 who are not regularly attending school or who are regularly and lawfully employed in some occupation or service. The law exempts those who have completed the eighth grade and those who would be exempted from day-school attendance under the terms of the compulsory school attendance law.

in a mine explosion; the boy had then become the chief wage earner in the family, in which there were six children under 16 years of age. His mother received \$45 a month as compensation, and kept a lodger. With the boy's earnings of \$983 the total family earnings for the year had been \$1,153.

A Polish boy of 16 had been working in the mines about a year and a half. Because he did not like school he had left at the age of 8, after completing the first grade, and without learning either to read or to write, and until he was almost 15 had neither attended school nor worked. "Mine boss saw him running around streets," said his younger sister, "so he asked why mamma don't make him work. So papa made him go into mine."

A colored girl had gone to school until she was 15, but had completed only the fourth grade. After a while she began to do laundry work for private families because she was "tired of staying at home and doing housework." Her father's earnings during the schedule year had amounted to more than \$1,550, and there was only one other child in the family.

John, the son of native white parents, had left school when 14 years of age to go to work, his father's earnings being small—\$731 during the schedule year—and the family large. He had not gone to work, however, until some months later. He then became a trapper boy, and during approximately two years in which he had been working in the mines he had had only eight months' employment.

A 15-year-old colored boy, whose father had been killed by a fall of slate, had left school after completing the sixth grade in order to go to work. He worked three months coupling cars in the mines but found the work too heavy; he then worked as an underground laborer, but at the end of eight days the work became slack and he was laid off. Later, he had worked again for two weeks as an underground laborer, leaving because the pay was too little. He then became a section hand on the railroad and worked for three months, but had "trouble with the boss" and left. At the end of eight months, having held four jobs, he was without work.

A 14-year-old girl had left school on finishing the fourth grade, because her mother was ill and needed her help with the four younger children. In the three years during which she had been out of school she had been a regular worker at three different times, for three months in all, doing housework for a married sister and receiving \$4 a week. Her father was earning between \$1,450 and \$1,850 a year.

A 14-year-old Polish boy had been working in the mines three months, having gone to work at the age of 13 on completing the fourth grade because he "just wanted to." He was earning \$3.18 a day as a trapper boy. His work was illegal because at the time both State and Federal²⁹ child labor laws prohibited employment in mines under the age of 16.

A Polish boy had gone to work as a loader's helper in the mines when not quite 14 years of age. At his mother's death his father had made him go to work, although he would have preferred remaining in school, where he had completed the seventh grade. At the time of the survey he was coupling cars in the mine. He was undersized, and disliked the work. He was planning to leave the mining camp, as soon as he had saved enough money, and go to work in a store.

A 16-year-old white boy whose father was dead and whose mother took in washing had been working for about three years, having left school at the end of the second grade to go to work because his father was ill. He had been a teamster, a laborer on

²⁹ The Federal child labor tax law, which constituted in effect a prohibition. See p. 3A.

the roads, and a laborer in a sawmill. Two days before he was interviewed he had secured a job as teamster with a mining company. During three years he had worked in all less than five months, having been discharged from each of his first three jobs because he was discovered to be under age.

Edgar, aged 10, a white boy of native parentage, had left school without completing the first grade because he preferred going to work. He liked to go with his father, who was engaged in cutting down timber for a mining company. At the time of the survey he had been working more than two years. Although unable to read or write, he could not be reached by the child labor law, which exempted agricultural pursuits from its provisions. The State compulsory school attendance law, however, if it had been enforced in his case, should have kept him in school.

An English boy had begun working in the mines at the age of 14, but had been obliged to discontinue his work owing to the first Federal child labor law. He then went to school for two years, completing the sixth grade. At the age of 16 he again went to work as a laborer in the mines; but after four months, finding the work too hard, he got a job driving a delivery wagon for the company store. At the end of 8 months, he left to "earn more money," and returned to the mines. He had been at work as a trip rider for 6 months. His father's earnings for the year had been only \$941, for although he received \$5.55 a day as a brattice man in the mines he had been out of work 108 days on account of strikes and shutdowns, and 9 days on account of illness.

Esther, a native white girl, left school on completing the second grade and went to work as a general houseworker at 11 years of age because her father had been killed in the mines and her family needed her earnings. For four years she had worked for a number of families in succession, and at the age of 15 had married.

Mary, a native white girl, finished the sixth grade when she was 14 years of age and left because the "school was no good, there was no regular teacher, and she couldn't learn anything." She left the mining community to go to work as a mother's helper, and had been employed for more than a year at \$5 a week, room and board.

Another girl in the course of two years "at work" had held five jobs as a houseworker, none more than one month at a time. She had left two places at the end of a few weeks because she had not liked the work, and two others because the "family had no more need of her." She had left school in the first grade because her father, a Russian Pole, did not "believe in schooling." Although she had come to the United States when 6 years of age, she had not entered school until she was 14.

A Polish boy in a family in which the father's earnings for the schedule year had been \$776, began work loading coal in the mines when only 10 years of age. He had been afraid in the mines at first and had worked with his father, his earnings being included in his father's pay check. He had not wanted to go to school because he was tall for his age and disliked being with the "little boys." He had worked as a loader one year, leaving because he wished "an easier job" and becoming first a trapper, then a trip rider, then a motorman in the mines. At the time of the survey he had been working for seven years, all except about two and a half years illegally. He had earned during the year covered in the study \$784—somewhat more than his father's earnings, as the latter had been out on account of straining his back lifting slate.

A native white boy whose father, a foreman in the mines, earned approximately \$2,200 a year, had gone to work at 15 years of age because no high school was available. He became a trapper boy but left the job in about 16 months because he secured work that he liked better. At the time of the survey he had held his job as an electrician's helper for 7 months.

MEDICAL CARE AND HEALTH.

GENERAL HEALTH CONDITIONS.

It is unnecessary to point out the close relation between the health of children and the sanitary conditions in the communities where they live. So long as such conditions as are described on pages 14-17 continue to exist, typhoid fever and other diseases connected with an impure water supply and the careless disposal of waste matter are likely to be a menace. No accurate figures showing the prevalence of typhoid fever in the county or in the State are in existence—West Virginia is not included in either the birth- or the death-registration area of the United States—but the rate in the State is known to be unusually high.¹ Following a survey of sickness among 6,000 families of bituminous coal miners and 16,000 anthracite miners' families, a well-known life-insurance company makes the following statement regarding the prevalence of infectious diseases:²

It will be noted that the rates for all causes combined, as well as for the great majority of the individual causes, are very much higher among bituminous miners' families. There are several factors concerned in this difference, chief among which is perhaps the fact that there are included in the bituminous group some families from the mining sections of West Virginia where sanitary conditions are known to be bad. The difference in the typhoid fever rates in this connection is striking. The infectious diseases of childhood (including measles, scarlet fever, whooping cough, and diphtheria), influenza, tuberculosis, rheumatism, diseases of the nervous system, and disabilities connected with the puerperal state are all much more prevalent in the bituminous miners' families surveyed than in the anthracite.

Although the West Virginia State Board of Health was at the time of this study invested with ample authority to control contagious and infectious diseases, the law failed to provide for adequate reporting, so that in the absence of exact knowledge of the extent and distribution of the various diseases the board was handicapped in the formulation of an intelligent program for their control.

In Raleigh County the health officer was a part-time official whose work appeared to be but little related to the mining communities. Inasmuch as the control of all municipal affairs in the unincorporated mining settlements is in the hands of the mining companies, insanitary conditions can be corrected by systematic efforts toward improvement made by the companies. What can and has been done in the way of sanitary betterment in company-controlled communities where con-

¹ Clark, Taliaferro: Public Health Administration in West Virginia, p. 232. U. S. Public Health Service, Reprint No. 252, from the Public Health Reports, 1915.

² Frankel, Lee K., and Dullin, Louis L.: Sickness Among Coal Miners and Their Families, pp. 1, 13, 14. Metropolitan Life Insurance Company, New York, 1917.

ditions originally were very similar to those in the mining settlements of Raleigh County, is described by the United States Bureau of Mines in a bulletin on sanitation at mining villages in the Birmingham district, Alabama.³ The cooperation of the workers has been an important factor in the improvement which has been brought about in these towns. The bulletin states:

This presupposes the education of the individual, the same difficult task that has been met by many mining companies in their efforts toward greater safety in and about mines. And to teach the white inhabitants of these camps hygiene and sanitation is not easy. In the isolated and mountain settlements whence many of them come they are accustomed to a life of freedom from restraint. They do not readily perceive the necessity of a different manner of living when confined in comparatively close-built communities. A similar education of the negro miners is no simpler task.



PRIVIES WHICH DRAIN INTO A STREAM RUNNING THROUGH THE SETTLEMENT

It has been imperative that the work of improvement should be carried along with all the difficulties in mind and fully appreciated. The companies could not go ahead roughshod. They have been compelled to advance a little at a time, content if their steps did not have to be retraced; to remedy the worst dangers and to permit the less serious ones to become evident to their men; to plan for to-morrow satisfied if the move of to-day was secure. They could not antagonize the persons on whose aid the whole scheme depended, even if those persons were the beneficiaries, and they had to draw their lines of restriction slowly, and always with a delicate finger on the pulse of public opinion.

MEDICAL CARE AND NURSING.

The population of the mountain mining village is usually too small to attract competitive medical practice; hence physicians are employed by the companies and paid by assessments deducted from the employees' pay. In the camps surveyed single men were assessed

³ Woodbridge, Dwight E.: Sanitation at Mining Villages in the Birmingham District, Ala. U. S. Bureau of Mines, Washington, 1913.

from \$0.75 to \$1.25 a month, married men from \$1.50 to \$2, in return for which they and their families were entitled to the services of the doctor except in surgical and confinement cases, for which an extra charge was made. Some companies turned over the total assessment to the physician, but one gave a straight salary of \$4,200 regardless of the amount collected in fees, and a few deducted 10, or even 20, per cent in payment for collecting the money from the workers' wages. Some of the physicians cared for several communities; none had more than 150 or 200 families under his care, and the territory covered was seldom more than a narrow strip from 1 to 3 miles long. The nearest independent physicians were at Beckley, and not easily available for the inhabitants of the more isolated of the settlements.

Experience has shown that any arrangement whereby an employer provides services for which employees must pay is likely to create dissatisfaction. It was therefore to be expected that, although some "company doctors" received nothing but praise, unfavorable criticism of the care given by others was frequently voiced. Typical charges were that repeated requests had to be made before any response from the physician was received; that follow-up calls were never made except upon request; and that doctors often gave "absent treatment" in the form of pills sent the patient, without any real knowledge of the nature of his illness. If employees were permitted a voice in the selection of the physician, and if an account were made of the moneys received and expended in medical care (such as are required in such arrangements between employers and employees in at least one State ⁴), there would probably be less dissatisfaction on the part of the workers and their families. The type of care given would depend less than under the present system on the conscientiousness of individual physicians and the attitude taken by the company.

Whether from lack of time or from lack of a realization of its value to the community, no company physician had attempted any educational propaganda looking to the prevention of disease and the preservation of health.

Hospital care was also arranged for through the mining companies, a monthly assessment of from 50 to 90 cents being deducted from each worker's wages. Employees and their families were thus entitled to hospital care in any illness that was not contagious. The hospital receiving the funds collected by the company was in some cases selected by the workers, in others by the company itself without reference to possible preferences of employees.

Three hospitals were available. The nearest and the one generally used by the families of the workers was at Beckley. It was a private hospital with a reported capacity of 125 beds, apparently ample

⁴ Oregon. See Oregon Acts of 1917, ch. 393.

accommodation for the demands made upon it. It accepted maternity cases and at the time of the survey was equipping an entire floor to accommodate 12 maternity patients. The hospital maintained no clinic or out-patient department.

In the settlements included in the survey, only one public-health nurse was at work. She served two camps. A fifty-fifty arrangement between two mining companies and a burial fund to which each mine worker contributed 45 cents a month brought in a sum of \$200 a month. Out of this amount, the nurse was paid \$190 for salary and expenses, the remaining \$10 being deposited to the credit of a "welfare fund."

MATERNITY CARE.

The physicians employed by the mining companies cared for confinement cases for a fee ranging from \$7 or \$10 to \$25. Practically all the mothers included in the present survey had been attended by a physician at their last confinement in a mining community. A few—3 per cent—had had a midwife, and 4 others had had no professional attendant.

The necessity for careful supervision of the mother's health before confinement was not generally recognized. Urinalysis was rare and pelvic measurements were unknown. Less than 1 mother in 10 reported urinalysis during pregnancy, and only about 1 in 3 had even seen the attendant before confinement. "These women don't know anything about things of that sort," one of the physicians remarked to a bureau agent, "so I seldom bother."

Care during and after confinement was somewhat more customary than prenatal supervision. The majority of the mothers, however, had received only 4 or fewer visits after the birth of a baby. Of the 392 women reporting on this point, only 98 had received a daily visit for at least 7 days—26 per cent of the white mothers and 23 per cent of the colored—although a minimum standard of adequate maternity care requires at least 7 after-care visits from the attending physician.⁵

One of the chief causes of the low standards of maternity care existing in the mining communities, as in the country at large, is the ignorance of mothers regarding the dangers connected with childbirth and regarding the need for proper hygiene and skilled care during pregnancy and confinement. Recognition of this fundamental factor in the loss every year of many thousands of women in childbirth led to the passage in 1921 of the Federal maternity act,⁶ under which Federal aid is extended to States accepting the provisions of the act and adopting a program of popular instruction in the hygiene of maternity and infancy. The act has been accepted

⁵ See Minimum Standards for Child Welfare, U. S. Children's Bureau Publication 62. Washington, 1919.
⁶ Session Laws 67th Congress, 1st session 1921, ch. 135, Public, No. 97, approved November 23, 1921.

Governor of West Virginia, pending the meeting of the State Legislature, and plans for the work have been submitted to the Federal Government. It is to be hoped that the program will benefit the mothers of the mountain mining camps whose restricted opportunities in school, early age at marriage, and isolation, render them particularly in need of instruction if their children's health and their own is not to be needlessly sacrificed.

INFANT MORTALITY.

Infant mortality rate, as usually computed, is the number of deaths of infants under 1 year of age per 1,000 born alive within a certain period. It was not practicable to ascertain for the communities included in the present study the number of children born within a certain period and the number of these who had died before the expiration of their first year; so that an infant mortality rate, as usually understood, can not be stated for the mining settlements. An infant mortality rate based on the total number of births in any community to the mothers of the families interviewed was, therefore, determined. This rate is 94 per 1,000 infants born alive. As it is on births occurring over a number of years it is not directly comparable to a rate based on births within any one year. Such as infant mortality rates have during recent years shown a tendency to decline, it might be expected that the rate found for mining communities would be larger than the rates for the United States birth-registration area¹ for the years 1915-1920. It appears, however, from Table XV, that the former on the whole compares rather favorably with the latter.

XV.—*Infant mortality rates in urban and rural areas, United States birth-registration area, 1915-1920.*¹

Year.	Deaths under 1 year per 1,000 live births in the birth-registration area.		
	Total area.	Cities of 10,000 population and over.	Rural.
.....	100	103	94
.....	101	104	97
.....	94	100	88
.....	101	108	94
.....	87	89	84
.....	86	91	81

¹Statistics, 1920, p. 26. U. S. Bureau of the Census, Washington, 1922.

The rate found for the mining communities is higher, however, than the average for rural parts of the birth-registration area, despite

¹Virginia was not in the United States birth-registration area at the time of this study.

the fact that in point of population at least the camps may be considered rural communities. Among the conditions in the camps less favorable to infant life than those in the open country may be mentioned the difficulty of procuring fresh milk, greater overcrowding within the houses, and poor sanitation, with a relatively congested population. Unfavorable atmospheric conditions, regarded by some authorities on the subject of infant mortality as a very important factor, do not as yet, it would appear, present a problem in these particular mining settlements, inasmuch as the air has not become vitiated to any great extent by coal dust and smoke.

The infant mortality rate for babies of foreign-born white mothers is higher in the mining communities, as in the United States birth-registration area, than that for children of native white mothers—122 as compared with 98. That the rate for children of negro mothers (55) is the lowest, is surprising in view of the fact that in the birth-registration area it is the highest.

FAMILY DIET.

Diet is of such importance in relation to health that an effort was made to secure information concerning the kind of food which children in the families interviewed were accustomed to receive, though no exhaustive study of dietaries was practicable. The foods eaten on the day preceding the interview were ascertained from each family; if the diet on the preceding day had differed, in the opinion of the family, from the ordinary one, information regarding that of a more typical day was requested. No attempt was made to learn wherein, if at all, the diet of the children differed from that of the family, but judging from the statement of two-thirds of the mothers that they were in the habit of giving their children the family diet before the latter had reached the age of 2 years, usually not later than the tenth month, it seems likely that what appeared on the family table was in general what the children ate. Neither was any attempt made to ascertain the quantity of food received, whether adequate or inadequate. The information secured merely indicates in a somewhat general way whether or not the essential food elements, such as milk, butter, eggs, fruit, vegetables, bread, and meat, were being included in the diet of most of the families.

Only three-fourths of the families were accustomed to using fresh milk every day. In the 151 families not having milk were 225 children under 7 years of age, or more than one-fifth of the total number of children of their ages. Since milk supplies adequate protein, vitamins, and minerals, lack of it in the diet is a serious loss for any child, and for children whose diet was undoubtedly restricted in other respects it was particularly unfortunate that they were receiving no milk. Whether or not young children in the families reporting

that milk was in daily use received the amount commonly regarded as the minimum for health for children between the ages of 2 and 7, that is, one pint, is not known. It was said that milk was hard to procure. Only about one-third of the families interviewed owned cows, possibly because pasturage on the steep mountain sides was poor. A family who owned no cow could sometimes purchase milk from neighbors, but the mother could not be sure, in such a transaction, that either the milk or the utensils used in handling it were clean.

Certain other valuable kinds of food were missing from many of the diets reported. Thus, 12 per cent of the families reported that they used no butter, the most easily digested of fats and a particularly valuable source of vitamins, especially when a large quantity of whole milk is lacking in the diet. Potatoes, supplying energy and valuable minerals, and usually a staple article, were not in daily use by close to one-third of the families. Most surprising of all is the lack of protein in any form in one-third of the family diets. That is, 211 families reported that on the day preceding the interview they had had no meat, eggs, fish, cheese, or other food—with the possible exception of milk—containing an appreciable amount of protein. The taste for meat is so general, especially where the diet is somewhat monotonous, and the miner's work is so heavy, that this lack in the diet is surprising; it is probably due to difficulty in procuring fresh meat, eggs, or fish in local stores.

More families reported vegetables than any other important food. Practically all had had some fresh vegetable on the table on the day for which information regarding diet was given. The majority of the families interviewed—seven-tenths—had gardens, though many, discouraged by the steep hillsides on which their houses are located, the rocky or swampy ground, and the expense of fencing, did not attempt one. The plots were usually too small to produce more than a limited amount and variety of vegetables and fruits. Most of the families raised only beans, corn, potatoes, tomatoes, and cabbage. Beets, onions, and lettuce were less commonly found in the gardens, and carrots and spinach, to mention only two of the most valuable of the common vegetables, were seldom or never grown. Very little fruit was grown; watermelons were raised in 10 gardens, cantaloupes in 6, raspberries; rhubarb, and apples each in 2, and five other fruits in as many gardens. It is therefore not surprising that less than half the families (45 per cent) had included fresh fruit in their typical day's diet.

The time of year at which the study was made—July and August—probably accounts for a more favorable picture as regards the use of fruits and vegetables than was actually the case. These were the months when the gardens were yielding. During the remaind~~er~~ of

the year canned goods from local stores had to be depended upon. In the absence of knowledge of the importance of a daily use of fruits and vegetables in the children's diet, it is probable that those eaten during the winter months were negligible in variety and quantity.

That the dietaries were not more adequate for growing children was no doubt due in part, at least, to the ignorance of the mothers regarding what food elements were essential. The mother in the mountain mining camp is at a great disadvantage in learning to feed her family scientifically. Because of her isolation she rarely, if ever, sees an exhibit or demonstration or hears a lecture on any subject pertaining to her home or her children, nor has she as a schoolgirl received any instruction in the principles of diet and hygiene. A program of popular instruction in these and allied subjects under a home demonstration agent and a county public-health nurse would no doubt be welcomed by many of the mothers.

Gardens need to be improved and enlarged (possibly the companies might allow the use of unoccupied land outside the camp limits for gardens) and here the agricultural agent could render valuable service. At the time of the Children's Bureau study the county had no agricultural agent. A public-health nurse had been engaged for the county, but at the time of the study had not entered upon her duties.

CHILDREN'S HEALTH CONFERENCES.

Children's health conferences in charge of a physician from the Children's Bureau were conducted in nine mining communities in Raleigh County, seven of which had been included in the survey. The chief object of the conferences was to acquaint mothers with the physical condition of their children and with methods of improving their children's health, but it was hoped also to arouse interest in periodic examinations and health supervision of young children by some public agency.

The conferences met with a cordial response from company and union officials, teachers, clergymen, and others. Ample publicity was secured through the local press; posters announcing the conference were placed in prominent places; notices were read at church services, union meetings, and motion-picture shows; and local persons visited mothers to notify them of the conference, make appointments, arouse their interest in having their children examined, and supply them with popular literature prepared by the Children's Bureau on the subject of the care of young children. The Children's Bureau motion-picture film, "Our Children," was exhibited (admission free) in several camps through the courtesy of the managers of the motion-picture houses.

The conferences were held in various places in the camps—company physicians' offices, schoolrooms, motion-picture theaters, etc. Each child was weighed, measured, and examined by the Children's Bureau physician, and the mother given a record of his condition

with suggestions for his improvement; when necessary the mother was urged to take the child to her own physician for treatment. No sick children were admitted, and no medicine or treatment was given by the Children's Bureau physician.

Three hundred and sixteen children of all ages up to 16 were examined. Many were brought by their fathers, who showed as keen interest in their children's physical condition as did the mothers. Many were brought a considerable distance for examination. One mother walked 1½ miles with five children and was much disappointed when she heard that it was impossible to have more than two examined on account of the large number who were awaiting their turn. One man walked a long way with three children of his own and three of a neighbor only to find that those who had secured appointments in advance had to be given preference. Having secured an appointment, however, he returned. Sometimes the company physician came with patients whom he wished to have examined, and teachers brought entire classes. The defects found, summarized in Table XVI, demonstrate great need of preventive work.

TABLE XVI.—Defects found in children given physical examinations, by age of child.

Defect or disease.	Children showing defect or disease.							
	Total.		Children under 2 years.		Children 2-6 years.		Children 7 years and over.	
	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Total.....	316	100.0	41	100.0	84	100.0	191	100.0
Total without defects.....	16	5.1	6	14.6	5	6.0	5	2.6
Total with defects.....	300	94.9	35	85.4	79	94.0	186	97.4
Defects:								
General—								
Anemia.....	18	5.7	3	7.3	6	7.1	9	4.7
Poor or very poor nutrition.....	156	49.4	16	39.0	43	51.2	97	50.8
Fat excessive.....	2	.6					2	1.0
Head—								
Open fontanelle in child over 18 months.....	2	.6	2	4.9				
Eyes—								
Vision defective (wears glasses).....	1	.3					1	.5
Eye diseases—								
Granulated lids.....	14	4.4			2	2.4	12	6.3
Conjunctivitis.....	15	4.7			4	4.8	11	5.8
Stye.....	2	.6					2	1.0
Strabismus.....	3	.9	1	2.4			2	1.0
Blepharitis.....	2	.6			1	1.2	1	.5
Ptosis.....	1	.3					1	.5
Corneal ulcer.....	1	.3					1	.5
Cataract (right), congenital.....	1	.3			1	1.2		
Wart on lid.....	1	.3					1	.5
One blue, one brown eye.....	1	.3					1	.5
Ears—								
Otorrhea.....	1	.3					1	.5
Deafness.....	1	.3					1	.5
Mouth—								
Decayed teeth.....	201	63.6	1	2.4	50	59.5	150	78.5
Malocclusion.....	28	8.9			4	4.8	24	12.6
Gingivitis.....	2	.6					2	1.0
Pyorrhea.....	16	5.1					16	8.4
Alveolar abscess.....	11	3.5			1	1.2	10	5.2
Alveolar process exposed.....	1	.3					1	.5
Teeth chalky.....	8	2.5			1	1.2	7	3.7
Teeth irregular.....	1	.3					1	.5

1 Children normal except for this defect.

56 CHILDREN IN COAL MINING COMMUNITIES, WEST VIRGINIA.

TABLE XVI.—Defects found in children given physical examinations, by age of child—Contd.

Defect or disease.	Children showing defect or disease.								
	Total.		Children under 2 years.		Children 2-6 years.		Children 7 years and over.		
	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	
Defects—Continued.									
Mouth—Continued.									
Tongue speckled (black).....	2	.6					2	1.0	
* Stomatitis.....	1	.3	1	2.4					
Herpes (lips).....	3	.9			1	1.2	2	1.0	
Excoriated lips.....	1	.3					1	.5	
Dirty.....	27	8.5			2	2.4	25	13.1	
Extraction of permanent tooth.....	1	.3					1	.5	
Nasopharynx—									
Adenoids.....	31	9.8	1	2.4	7	8.3	23	12.0	
Tonsils—									
Enlarged only.....	38	12.0	1	2.4	16	19.0	21	11.0	
Diseased only.....	49	12.7			11	13.1	29	15.2	
Enlarged and diseased.....	28	8.9			3	3.6	25	13.1	
Mouth breathing.....	24	7.6	1	2.4	8	9.5	15	7.9	
Nasal obstruction.....	32	10.1	1	2.4	8	9.5	23	12.0	
Nasal discharge.....	14	4.4	5	12.2	6	7.1	3	1.6	
High-arch palate.....	19	6.0			3	3.6	16	8.4	
Bifurcated palate (congenital).....	1	.3			1	1.2			
Soft palate clipped.....	1	.3					1	.5	
Long palate.....	1	.3					1	.5	
Thyroid.....	2	.6					2	1.0	
Congested throat.....	2	.6					2	1.0	
Excoriated nares.....	1	.3					1	.5	
Glands—									
Hypertrophied (without associated infection).....	31	9.8	6	14.6	9	10.7	16	8.4	
Hypertrophied (with associated infection).....	105	33.2	2	4.9	28	33.3	75	39.3	
Circulatory system—									
Heart disease.....	5	1.6			1	1.2	4	2.1	
Respiratory system—									
Respiratory diseases.....	4	1.3	1	2.4	1	1.2	2	1.0	
Skin—									
Infected sores.....	31	9.8	1	2.4	11	13.1	19	9.9	
Hives.....	14	4.4	6	14.6	7	8.3	1	.5	
Exzema.....	4	1.3	2	4.9	2	2.4			
Hypertriehosis.....	2	.6			1	1.2	1	.5	
Scabies.....	7	2.2					7	3.7	
Acne.....	3	.9					3	1.6	
Abscess or boils.....	1	.3					1	.5	
Pediculosis.....	3	.9	2	4.9	1	1.2			
Eruption—undiagnosed.....	1	.3			1	1.2			
Sore foot (accident).....	3	.9	3	7.3					
Birth mark.....	16	5.1	3	7.3	10	11.9	3	1.6	
Abdomen—									
Distention.....	9	2.8	3	7.3	5	6.0	1	.5	
Hernia.....	77	24.4	1	2.4	11	13.1	65	34.0	
Bony and muscular system—									
Pronation.....	4	1.3	1	2.4	3	3.6			
Beaded ribs.....	1	.3	1	2.4					
Harrison groove.....	6	1.9					6	3.1	
Pigeon breast.....	1	.3					1	.5	
Depressed sternum.....	1	.3					1	.5	
Asymmetrical chest.....	4	1.3			3	3.6	1	.5	
Flaring ribs.....	6	1.9			2	2.4	4	2.1	
Enlarged epiphyses.....	37	11.7	1	2.4	3	3.6	33	17.3	
Round shoulders.....	104	32.9	1	2.4	22	26.2	81	42.4	
Winged scapulae.....	8	2.5	2	4.9			6	3.1	
Lordosis.....	12	3.8	1	2.4	4	4.8	7	3.7	
Knockknee.....	4	1.3	2	4.9			2	1.0	
Bow legs.....	15	4.7			9	10.7	6	3.1	
Pigeon toe.....	2	.6			1	1.2	1	.5	
Deformed leg (rachitic).....	2	.6					2	1.0	
Deformed tibia (rachitic).....	1	.3					1	.5	
Hip disease.....									
Nervous system—									
Tic.....	1	.3					1	.5	
Speech defect.....	1	.3					1	.5	
Genitalia—									
Prepuce adherent.....	2	.6	1	2.4	1	1.2			
Prepuce contracted.....	4	1.3	4	9.8					
Congestion—milky discharge.....	1	.3	1	2.4					
Mental condition—									
Retarded mentality.....	2	.6			1	1.2	1	.5	

Apart from the advice given in individual cases such conferences are of value in bringing to light the particular health problems of a community, such as the need for instruction in the hygiene of pregnancy and confinement or of advice as to the care and feeding of children, the need for physical examinations of school children, and the importance of educating the community in matters of hygiene and sanitation. Many of these needs a public-health nurse would be able to meet.

SOCIAL LIFE AND RECREATION.

In the smaller mining settlements, such as those included in the present study, no community life exists, and recreational facilities for either children or adults are few. One of the camps had nothing in the way of diversion, and one had nothing except a pool room. Even neighborly sociability is discouraged by the fact that the population is so unstable. As one lonely woman remarked, "You don't know any of your neighbors; they move in to-day and out to-morrow." Beyond the daily tasks, people in these isolated communities have little to do or to think about.

The almost intolerable monotony of existence is relieved in some of the settlements by motion pictures. Of the 11 camps included in the survey 6 had motion-picture houses showing pictures usually two or three times a week, or had easy access to a theater in another community; and 2 other camps were planning to build a theater in the near future. The only other commercial amusement in any of the settlements was the pool room, found in 3 camps.

In the way of noncommercial recreation or community activities practically nothing had been provided. There existed no social agency in most of the communities which could supply the necessary leadership. The schools had not recognized their responsibility in leading the way to a richer community life. Only one of the camps had a church with a regular pastor and regular weekly services for both white and colored, and even there at the time of the survey the people were dependent upon visiting ministers, as the pastor had resigned. In one community a Sunday school was held at irregular intervals. More than half the camps had no church service, and one community shared the services of a neighboring camp. Of the four which did have some sort of religious services, one had none for white people, one had "preaching" irregularly, and another had services only occasionally.

It would appear that the mining companies had taken the lead in providing whatever social or recreational activities existed. The largest of the settlements had what was known as an "institute," an organization of mine executives somewhat on the order of a chamber of commerce, which in addition to backing the motion-picture house promoted from time to time other recreational and educational projects. During the winter preceding the survey, for instance, the institute had arranged for an extension course on mining, which was held once a week for six months; it had also supported a baseball team for one season. Three other camps had baseball fields provided by the coal company. These were in good condition and much used.

Boys had the use of the baseball diamonds when the men did not want them. Little or no recognition of the play needs of children was indicated. Only one camp had a playground, company owned and equipped, which had fallen practically into disuse, apparently for lack of the right kind of leadership. The lack of playgrounds is the more unfortunate in that some of the camps have no open spaces where children may safely play. The mining camp, though in the country, is not of it. Railroad tracks run through the settlement, the ground is rough and uneven, yards are small and houses crowded close together. Thus, even those elementary activities which children delight in and which are so necessary a part of their development, such as running and climbing, leaping, throwing, wrestling, must necessarily be restricted. A few attempts by company officials to



LACK OF PLAY SPACE.

organize a boy-scout or a camp-fire group had not been particularly successful, though one boy-scout troop, disbanded at the time of the survey because the leader had left the camp, was said to have been flourishing at one time. One of the mining companies, in order, it was said, to stimulate the interest of the children in church activities, had during the summer preceding the survey engaged a "welfare worker" who held daily classes for children, teaching them hymns, telling them Bible stories, and teaching handicraft. In the case of children who are out of school half the year, and of boys and girls who have left school but are often without employment, the problem of a profitable and happy use of leisure is a very real one.

The use of the school as a social center is to be recommended for the mining town no less than for the rural community. At present

the schoolhouses in the mining settlements commonly stand closed and unused for six months of the year. Only one school was reported as being ever used, even during the winter, for any community meeting—in this case a weekly "singing school." Until the schools are considerably improved, they can hardly be expected to take the lead in creating and supplying a demand for a richer family and community life. The increased salaries and better training for teachers, and the longer school terms, provided for under the West Virginia education law of 1919¹ should bring about such an improvement. It is to be hoped that this law will result also in an enrichment of the school curriculum to include, at least, music, drawing, and gymnasium work. Out of work of this type might very naturally develop exhibits, public drills, games, contests, and pageants which would be not only a source of entertainment and diversion but also a starting point in arousing community interest, now so conspicuously lacking in the ordinary small mining town.

The county agricultural and home demonstration agent, in recent years a vital force in hundreds of agricultural communities, could do similar and much-needed work in the smaller mining settlements, at least in those where the town site will permit of gardens, or where land outside the limits of the settlement is available for gardening. The garden interest is an especially valuable one for men who spend their days in the darkness of a mine; incidentally, gardening might discourage the keeping of domestic animals, a somewhat questionable practice in the crowded camp. Out of the garden interest, clubs with helpful and stimulating programs for boys and girls, and for women, also, would no doubt develop in the course of time.

The influence of the mining company's attitude, policy, and assistance is not to be underrated. The company, inasmuch as it controls all property and is looked to for leadership, is in a position to do a great deal toward making the mining town attractive in its social and community life, as in other respects. While it is desirable that social and recreational activities should grow out of the needs and aspirations of the community rather than that they should be imposed from above, nevertheless the mining company through sympathetic and tactful leadership might well play the rôle of the private organization which demonstrates the value of a program to the public before the latter is able or willing to undertake it.

¹ West Virginia Acts of 1919, ch. 2.

INDUSTRIAL CONDITIONS AFFECTING CHILD WELFARE.

ANNUAL EARNINGS OF CHIEF BREADWINNERS.

It is conceded that economic conditions which permit the average worker to maintain his family in health, decency, and simple comfort are fundamental to child welfare. In bituminous mining certain factors, such as short time and irregularity of operation, which until recently have not been generally understood, seriously affect the worker's ability to provide adequately for the needs of his family, in spite of the fact that daily earnings are often comparatively high. In most of the families interviewed in the present study the father is the head of the household and the principal breadwinner. In some families, however, the mother was the chief breadwinner, and in others the head of the household was some person other than the father or mother, the responsibility in 4 of the families devolving upon a child less than 18 years of age. Wage data were secured from the father himself, wherever possible, otherwise from the mother or the most responsible member of the family who could be interviewed. The family's statement was in many cases verified by semi-monthly pay slips issued by the mining companies which many of the men employed were in the habit of keeping.

Of 514 chief breadwinners who reported that they had been heads of their respective households during the entire year preceding the inquiry and who reported the amount of their earnings 414, or four-fifths, had earned less than \$1,850; 204, or two-fifths, had earned less than \$1,250; and 69, or 13 per cent, had earned less than \$850. Men engaged in occupations other than those connected with mining had received somewhat larger annual earnings than those employed in mining; thus, only 25 per cent of the former as compared with 69 per cent of the latter had earned less than \$1,250, and only 69 per cent as compared with 85 per cent had earnings totaling less than \$1,850. The same proportion, however, 13 per cent, of the breadwinners who were employed in mining and in other industries had received less than \$850 for the year's work, the nonmining group being considerably influenced by the inclusion of 10 mothers who during the year had taken lodgers and done laundry or other domestic work in order to support their families. When superintendents and other mine executives are excluded from the one group, and professional workers (that is, company physicians, ministers, electrical engineers, etc.) from the other, the earnings of men engaged in the mining operations are seen

TABLE XVII.—Annual earnings of chief breadwinner, by occupation.

Occupation.	Chief breadwinners, June 30, 1920.											Not during entire year preceding.
	Total.	During entire year preceding.										
		Reporting specified annual earnings.											Not reporting annual earnings.
	Total.	Less than \$850.	\$850. less than \$1,050.	\$1,050. less than \$1,250.	\$1,250. less than \$1,450.	\$1,450. less than \$1,850.	\$1,850. less than \$2,250.	\$2,250. less than \$2,850.	\$2,850. less than \$3,450.	\$3,450. and over.		
Total.....	639	612	61	74	72	138	49	22	16	13	98	27
Mining occupations.....	470	449	55	64	57	91	26	16	10	4	76	21
Superintendent, assistant superintendent, manager	10	10					1	1	2	3		
Bosses and foremen:												
Driver boss.....	3	2				1	1					1
Fire boss.....	4	4										
Foreman, assistant foreman.....	24	25	2	2	3	6	4	6	1		1	1
Tippie boss.....	3	3				2	1					
Operatives:												
Brattice man.....	4	3				2						
Laborer, surface.....	42	41	7	7	7	7						1
Laborer, underground.....	26	24	4	3	2	3	1				6	2
Machine man, runner, cutter.....	16	15	2	3	2	5		2			7	1
Miner.....	248	239	27	38	30	46	10	3	4		52	9
Motorman.....	32	30	2	3	7	7	1	1		1	3	2
Pumper, pipeman.....	11	11			2	3	2	1				
Rock man.....	3	4	1	1								1
Tumberman, rodman.....	4	4										
Trackman.....	26	24	2	4	2	7	2				3	2
Trip rider.....	7	7	3	2								
All other.....	5	5										
Other occupations.....	169	163	19	10	15	47	23	6	6	9	22	6
Agriculture and forestry.....	10	10			3	3						
Clerical.....	8	8										
Domestic and personal service.....	27	24	11	1	1	3	2				3	
Manufacturing and mechanical.....	72	65	4	4	7	32	14	2	1	1	11	3
Blacksmith.....	11	11	1	1							4	
Carpenter.....	16	15	1	1		5	3				1	
Electrician.....	18	18	1	1	2	4	3				2	
Engineer.....	9	8			2	3	2					1
Machinist.....	6	6			2	3	2					1
Other.....	13	12	1	3	1	3	1	1	1		1	1

	7	10	10	10	25	7	9	9	9	23	1	1	1	1	1	1	1	1	1	1	1	PER CENT. ¹									
																						7	10	10	25	7	9	9	9	23	11.9	13.4	14.4	14.0	26.8	9.5	4.3	3.1	2.5
Public service.....	7	10	10	10	25	7	9	9	9	23	1	1	1	1	1	1	1	1	1	1	1	1	11.9	13.4	14.4	14.0	26.8	9.5	4.3	3.1	2.5
Professional.....	7	10	10	10	25	7	9	9	9	23	1	1	1	1	1	1	1	1	1	1	1	1	11.9	13.4	14.4	14.0	26.8	9.5	4.3	3.1	2.5
Trade.....	7	10	10	10	25	7	9	9	9	23	1	1	1	1	1	1	1	1	1	1	1	1	11.9	13.4	14.4	14.0	26.8	9.5	4.3	3.1	2.5
Transportation.....	7	10	10	10	25	7	9	9	9	23	1	1	1	1	1	1	1	1	1	1	1	1	11.9	13.4	14.4	14.0	26.8	9.5	4.3	3.1	2.5
Total.....						100.0	100.0	100.0	100.0	100.0	100.0												100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mining occupations.....						100.0	100.0	100.0	100.0	100.0													100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Miner.....						100.0	100.0	100.0	100.0	100.0													100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Other occupations.....						100.0	100.0	100.0	100.0	100.0													100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing and mechanical.....						100.0	100.0	100.0	100.0	100.0													100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Not shown where base is less than 50.

to compare even less favorably with the earnings of those in other occupations. Only 13 per cent of the actual workers in the mining industry—"pick and shovel" men, machine runners and cutters, motormen, laborers, fire bosses, mine foremen, etc.—reported that they had received as much as \$1,850 for their year's work, whereas 28 per cent of the workers outside the industry,¹ such as carpenters, blacksmiths, engineers, electricians, machinists, domestic workers, railroad employees, etc., earned at least \$1,850 during the year. The substantial accuracy of the estimates of income made by the families of the wage earners in the mining industry is indicated by the evidence of pay-roll figures secured from one of the larger coal-mining companies employing a number of the men included in the schedule study. Of 41 chief breadwinners in the families interviewed who appeared on this pay roll and who had reported their earnings, 26 had reported slightly larger and 15 somewhat smaller earnings than the pay roll showed. The average discrepancy where the breadwinner had reported his net earnings as larger than the amount indicated on the pay roll was \$197; where he had reported his net annual earnings as smaller than the pay roll showed, the average difference was \$98. Had the 41 been classified into wage groups according to pay-roll figures instead of according to the wage data supplied by the family, 24 would have fallen into the same income group, 12 into an income group lower, and only 5 into a group higher, than that in which they are classified in the present report. If the cases of these 41 workers, 8 per cent of those in the families interviewed reporting wages, are typical—and there is every reason to believe that they are—it seems likely that the annual earnings as reported are somewhat higher than the pay rolls, had they been available for all the workers, would have shown.

The reasons for the low annual earnings in the mining industry have become so well known to the public since the wage and hour disputes between miners and mine operators which have followed the armistice, that only a brief mention of them need be made.

The majority of the miners are paid on a tonnage basis, their earnings being limited by the number of tons of coal (in the union fields, carloads) which they can cut down and load. This depends not only upon the miner's skill, but also upon mine conditions and equipment, the number of cars placed at his disposal, and also, if he himself does not cut down the coal, but only loads that brought down by machine cutters, upon the amount of coal that has been cut down the day before. A man may have to spend half a day laying tracks or putting up timbers in order to make his working place safe, work for which he is paid, if at all, at a lower rate than for actual mining;

¹ It will be remembered that many of these workers were employed by the mining companies, though engaged in other than strictly mining operations.

he may have to wait around several hours for cars to load, earning nothing at all; or, owing to some condition over which he has no control, he may be able to remain in the mine only a few hours—practically three-fifths of the mine employees in the present study reported short time. Thus, although his maximum daily wage may be high—almost one-sixth of the heads of households in the present study who were engaged in mining reported \$15 or more as their maximum day's pay—it is not a fair indication of the mine worker's average daily wage. Still less is it an indication of his annual income; for, due chiefly to overdevelopment of the industry and, in a somewhat lesser degree, to car shortage and labor disputes, the mines operate very irregularly. "The potential working year in the American bituminous industry," states F. G. Tryon, of the U. S. Geological Survey,² "is 308 days. In the last 30 years the mines have actually worked on the average 215 days, and have lost 93 days, or 30 per cent of the potential time, in enforced idleness due to one cause or another." Moreover, the number of days during which any mine is reported as being in operation is likely to be larger than the number of days' employment actually available for all the workers; a fall of roof, a car wreck, flooding, or a gaseous condition, for example, may cause a shutdown of the part of the mine affected, with consequent loss of time for a larger or smaller proportion of the workers. It is not surprising, therefore, that a large amount of unemployment was reported by the chief breadwinners in the families interviewed, that unemployment was more serious for men engaged in mining than for those in other occupations, and that the greater part of the mine workers' unemployment was due to industrial causes. Industrial unemployment, reported by less than one-fifth of the breadwinners in industries other than mining, even when working for mining companies, had affected 76 per cent of the men in the mining industry. Of 126 of these men who were able to give the duration of their unemployment, more than one-third had been out of work as a result of industrial conditions at least three months (78 shifts) during the year. The average number of days (shifts) lost per man was 64.³

² Tryon, F. G., and McKenney, W. F.: "The broken year of the bituminous miner," in the Survey, Vol. XLVII (Mar. 25, 1922), p. 1009.

³ During the period covered by the present study (the year ending June 30, 1920) the mines of Raleigh County were reported as in operation an average of 190 days, a loss of 118 of the possible working days. (Annual Report, West Virginia Bureau of Mines, 1920, p. 242.) The situation as regards the number of days of operation was thus somewhat worse than the average, but better than that during the calendar year 1921 or the calendar year 1922. The fact that the loss of time reported by the men included in the present study is less than that reported for all the mines of the county as a whole may indicate that the men went from mine to mine, wherever work was available; it may possibly indicate, also, a comparatively larger proportion of nonunion men among those included in the study, who would not have been affected by the nation-wide strike in the bituminous mining industry in 1919.

68 CHILDREN IN COAL MINING COMMUNITIES, WEST VIRGINIA.

TABLE XIX.—Duration of total unemployment of chief breadwinner during selected year, by occupation.

Duration of total unemployment.	Chief breadwinners in industrial employments, June 30, 1920. ¹				
	Total.	In mining occupations.		In other occupations.	
		Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	594	449	100.0	145	100.0
Having no unemployment.....	128	51	11.4	77	53.1
Having unemployment.....	460	393	87.5	67	46.2
Under 13 shifts ²	29	13	.....	16	.....
13 shifts, under 26.....	29	16	.....	13	.....
26 shifts, under 52.....	34	23	.....	6	.....
52 shifts, under 78.....	34	24	.....	10	.....
78 shifts, under 104.....	26	23	.....	3	.....
104 shifts, under 130.....	29	27	.....	2	.....
130 shifts, under 156.....	17	16	.....	1	.....
156 shifts and over.....	38	36	.....	2	.....
Duration not reported.....	224	210	.....	14	.....
Not reported as to unemployment.....	6	5	.....	1	.....

¹ Excluding 18 in domestic service and professional occupations, and 27 who were chief breadwinners for part of the year only.

² A shift is equivalent to an 8-hour day.

TABLE XX.—Duration of industrial unemployment of chief breadwinner during selected year, by occupation.

Duration of industrial unemployment.	Chief breadwinners in industrial employments, June 30, 1920. ¹				
	Total.	In mining occupations.		In other occupations.	
		Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	594	449	100.0	145	100.0
Having no industrial unemployment.....	219	107	23.8	112	77.2
Having industrial unemployment.....	369	342	76.2	27	18.6
Under 13 shifts ²	19	14	.....	5	.....
13 shifts, under 26.....	14	7	.....	7	.....
26 shifts, under 52.....	33	30	.....	3	.....
52 shifts, under 78.....	32	31	.....	1	.....
78 shifts, under 104.....	25	23	.....	2	.....
104 shifts, under 130.....	13	13	.....	.....	.....
130 shifts, under 156.....	5	5	.....	.....	.....
156 and over.....	3	3	.....	.....	.....
Duration not reported.....	225	216	.....	9	.....
Not reported as to unemployment.....	6	.....	.....	6	.....

¹ Excluding 18 in domestic service and professional occupations, and 27 who were chief breadwinners for part of the year only.

² A shift is equivalent to an 8-hour day.

In addition to the time lost because of the intermittent operation of the mines, the working time of mine employees frequently is further reduced by accidents, which are of common occurrence in the mines. Among the families interviewed more than 1 chief breadwinner in every 10 in the mining industry reported an accident during

the year which had incapacitated him for work. Of the 52 fathers reporting loss of time due to accident, 48 were engaged in mining, relatively four times as many as in other industries. About one-third of those incapacitated by accident were unable to work for at least one month. The amounts of compensation fixed by the workmen's compensation law were very low; at the time this study was made the compensation for temporary total disability resulting from an industrial accident was 50 per cent of the workman's average weekly wage, not to exceed \$12 nor be less than \$5 a week, to be received for a fixed period.⁴ Under this schedule of payment one man who had been unable to work for 6 weeks, having had his back and hips crushed by a fall of slate, reported that he had received a little over \$30. No payment was made for accidents incapacitating the worker for a period of less than eight days. It is probable that a large proportion of the nonfatal accidents occurring to mine workers result in disability of brief duration, so that many men lose time on account of accidents connected with their work during which they receive neither wages nor compensation. On the other hand, many nonfatal accidents are sufficiently serious to render the worker incapable of earning wages for a long period of time, while the amount of compensation allowed is too small to replace the lost wages. Thus, one man doing carpenter's work on a tipple had fallen and struck his forehead, injuring his sight and impairing his memory; his compensation for "partial disability" amounted to \$35 a month. This man was exceptionally fortunate in that although unfit to do steady work he had been able to work at odd jobs, thus supplementing the family income by approximately \$200 a year. Earnings which would permit of generous savings and insurance would seem to be essential in an industry the hazardous nature of which makes adequate provision for emergencies imperative if children are not to suffer hardships.

The charge has frequently been made that mine workers do not make full use of the opportunities for labor afforded them, and the operators have stated that if the worker averaged only 75 per cent of the available time he could make a good living.⁵ In the words of the majority report of the U. S. Bituminous Coal Commission,⁶ "—— an irregular industry breeds irregular habits among the workers. When the men are not accustomed to going to work regularly every morning the incentive for regularity becomes less potent and a certain amount of absenteeism inevitably results. This is the psychological factor of irregularity, and it may be expected that it will disappear in large measure as the industry becomes more stable."

⁴ West Virginia Acts of 1913, ch. 10 (as amended by acts of 1915, ch. 9, and acts of 1915, first extra session ch. 1), secs. 30, 31 (as amended by acts of 1919, ch. 131).

⁵ Award and Recommendations of the U. S. Bituminous Coal Commission, 1920, p. 44.

⁶ *Ibid.*, p. 45.

Nevertheless, so far as the data obtained in the present survey indicate, the proportion of mine workers reporting voluntary unemployment was practically no greater than that of workers in other industries, the percentages being 26 and 24, respectively. The average number of days of voluntary unemployment reported by the two groups was for mine workers 20 and for others 16. Possibly the men included in the present study, having in all cases the responsibility of supporting a family, were on the whole more industrious and stable than the average worker. It does not appear, however, that mine workers reporting no voluntary unemployment had been able to earn substantially larger incomes than those who had taken time off of their own accord: 68 per cent of the former as compared with 80 per cent of the latter had earned less than \$1,850 for the year; the proportions of those earning less than \$1,250 were 35 per cent and 44 per cent, respectively.

FAMILY EARNINGS.

The income of a man employed in a mining camp is perhaps less likely to be supplemented to any considerable extent by the earnings of women and children in the family than that of other industrial workers, inasmuch as in the one-industry mining town opportunities for employment open to women and to girls and boys under 16 are very limited. In about two-fifths of the families interviewed, there was at least one wage earner in addition to the head of the household. Most of these wage earners were adult sons. The few working children under the age of 18 usually made no appreciable difference in the family income except in cases of boys 16 or over who worked in the mines. Few mothers worked outside the home, but 194, or almost one-third of the total, contributed to some extent to the family income by taking boarders or lodgers, doing laundry work, or cleaning by the day. Some of these mothers were widows who thus supplemented the earnings of a grown son who had assumed the chief responsibility for the support of the family. However, even in those families in which the income was contributed to by one or more wage earners in addition to the head of the household, 65 per cent of the families who reported earnings were in receipt of less than \$1,850 a year and 30 per cent had incomes totaling less than \$1,250.

TABLE XXI.—Annual earnings of family, by number of breadwinners.

Annual earnings of family.	Families.										
	Total. ¹	With one breadwinner only.		With more than one breadwinner.							
				Total		2		3		4 and over.	
		Num-ber.	Per-cent. ²	Num-ber.	Per-cent. ²	Num-ber.	Per-cent. ²	Num-ber.	Per-cent. ²	Num-ber.	Per-cent. ²
Total.....	639	358	56.0	280	43.8	199	31.1	55	8.6	26	4.1
Under \$850.....	56	37	66.1	19	33.9	18	32.1	1	1.8	.....	.....
\$850, less than \$1,050.....	56	30	53.6	26	46.4	24	42.9	1	1.8	1	1.8
\$1,050, less than \$1,250.....	68	47	69.1	21	30.9	19	27.9	2	2.9	.....	.....
\$1,250, less than \$1,450.....	67	45	67.2	22	32.8	18	26.9	4	6.0	.....	.....
\$1,450, less than \$1,850.....	132	76	57.6	56	42.4	45	34.1	5	3.8	6	4.5
\$1,850, less than \$2,250.....	55	31	56.4	24	43.6	16	29.1	5	9.1	3	5.5
\$2,250, less than \$2,850.....	35	14	.....	21	.....	15	.....	4	.....	2	.....
\$2,850, less than \$3,450.....	30	11	.....	19	.....	4	.....	9	.....	6	.....
\$3,450 and over.....	21	7	.....	14	.....	4	.....	6	.....	4	.....
Not reported.....	119	60	50.4	58	48.7	36	30.3	18	15.1	4	3.4

¹ Excluding 6 families in which there were no chief breadwinners.

² Not shown where base is less than 50.

³ Including 1 family for which the number of breadwinners was not reported.

COST OF LIVING.

In 1919, Prof. Wm. F. Ogburn, of Columbia University, made a special study of the cost of living as related to bituminous mine workers' families, and prepared a budget adapted to the particular needs of mine workers and to the special conditions in mining towns. This budget, believed to represent a minimum of health and reasonable comfort for a mine worker's family of parents and three children, called for an annual income of \$2,143.94 at the prices prevailing at the time. It provided for no savings.⁷

Of the men in the present study employed in the mining industry and reporting the year's earnings⁸ only 6 per cent had received so much as \$2,250, approximately the amount required for Prof. Ogburn's budget; of the workers in industries other than mining,⁹ only 12 per cent—though relatively twice as many as in the mining industry—had enjoyed an income of at least \$2,250. More than one-third of the families in which the main breadwinner had earned less than \$2,250 had more than three children.

Irregularity of work and the impossibility of forecasting what earnings will be, make a wise expenditure of income, whatever its size, very difficult for the mine worker's family. The necessity of moving frequently from field to field and mine to mine "following" work also creates a special expense which eats into savings

⁷ Ogburn, Wm. F.: "Budget for bituminous coal mine workers," in *Studies of the Cost of Maintaining a Family at a Level of Health and Reasonable Comfort*, p. 34. Presented before the U. S. Railway Labor Board by W. Jett Lauck, 1920.

⁸ Exclusive of a general manager and nine superintendents and assistant superintendents.

⁹ Exclusive of "professional workers."

or plunges a family into debt. It is not surprising, under these circumstances, that most of the mine workers' families rely on credit. The coal companies' practice of issuing "scrip," a book of coupons which passes at the company provision store for money, no doubt encourages the habit of purchasing on credit and even beyond the means of the purchaser. Approximately four-fifths of the families interviewed were accustomed to using scrip. The amount which the employee owes the company store is deducted from the semi-monthly pay before it is handed over to the worker. Some families were constantly "scrip bound," that is, deductions for purchases at the store equaled or exceeded their earnings, so that on pay days they never saw cash. Such an arrangement is bound to cause dissatisfaction, whether well-grounded or not. The following were typical comments regarding it made by parents in the families interviewed:

You no sooner get your money than they take it right back from you. A 24-pound sack of flour which costs \$2.50 at the company store costs only \$1.90 at B——.

We use very little scrip, as prices are so high at the company store.

We have to deal where we can get the most for our money, so we only trade at the company store when we're in a big hurry.

Company store is too expensive. We'd rather pay 25 cents railroad fare and shop in S——.

As soon as the company gives a raise prices at the store go up.

It is inconvenient to get to the other stores, or I wouldn't deal there. The company store charges high prices, so farmers who bring in their produce also ask a good price.

When a mule dies on the company, prices at the store go up.

The company store is too high, but it is so far away to the others that we have to use it sometimes.

The prices are high. The nearest other store is 2 miles away, but we prefer to walk the distance and trade there.

We wouldn't trade at the company store at all, prices are so high there, if the other stores weren't so far away.

We'd rather go a couple of miles where things are cheaper.

It was impossible within the scope of the present study to determine with any accuracy whether or not prices charged at the company stores were higher than those at private stores in the neighborhood. Undoubtedly the isolation of many of the settlements tends to increase the cost of many necessities. Miners' cooperative stores, of which there were several in the territory included in the survey, may possibly help to reduce somewhat the cost of living.

FAMILY SAVINGS.

Of the 540 families reporting on savings, 29 per cent reported that they had saved something during the year—approximately the same proportion, 33 per cent, of native whites as of those of foreign birth, but only 19 per cent of the colored. The ability to save shown by families in the present study was closely related to the amount of the

income and the size of the family. Thus of all the families with incomes of less than \$1,850 only 22 per cent had been able to save, a proportion which dropped to 14 per cent among families in this group which had more than five members; of the families with incomes under \$1,250 a year, even among those of small or "average" size only 16 per cent had saved, and among those of more than five members only 3 per cent reported having saved; but almost three-fifths of the families with incomes of at least \$1,850 had been able to save during the year.

No attempt was made to ascertain the amount of the savings, nor was any attempt made to discover the number of families having deficits. In a recent study of cost of living among bituminous mine workers made by the United States Bureau of Labor Statistics,¹⁰ the same proportion, i. e., 30 per cent, of families were found to have saved on an average of \$228 during the year covered by the inquiry; but 60 per cent of the families interviewed reported a deficit averaging \$313 per family.

MINERS' FAMILIES LIVING OUTSIDE COMPANY TOWNS.

It appeared to be possible, so far as some of the mining companies were concerned, for mine employees to live outside company towns. Several miners stated that some years ago the policy of most companies had been to make employment conditional upon living in "camp" but agreed that probably during recent years no attempt had been made to prevent employees from living where they pleased, and that men who chose to live outside were not discriminated against by their employers. One old miner expressed the consensus of opinion when he said: "There used to be right smart prejudice about it, but there is more unity in this generation and the men are more independent." The opportunities, however, of securing a house that is not company owned and at the same time is conveniently near the mines are limited. A few families leased land from coal companies and erected their own houses; they secured the land rent free for a short term of years and upon their leaving the houses became the property of the company. According to the terms of the lease any trouble with the coal company was considered a cause for eviction. There were also several small settlements adjacent to the mines in which property could be rented or bought. The largest of these, consisting of 50 or 60 families, was within a mile or so of half a dozen mines; the land, it was said, had been bought from the original owners by miners in the early days of coal mining in the county, and attempts of the coal companies to get possession of it had met with no success. Another settlement made up of several dozen miners was located on top of a mountain and was practically inaccessible except on foot or horseback. One or two other independent communities contained only 10 or 12 families each. Probably somewhat less than one-tenth of the men employed by companies whose towns were included in the present survey lived either on farms in the open country or in one of these small independent settlements. As there were comparatively few houses to rent, the possibility of living outside camp was conditioned to a great extent upon the ability to save enough to buy property.

In order to ascertain what were the advantages, if any, in living outside company-owned towns, agents of the Children's Bureau interviewed 72 of these families in which the chief breadwinner was at the time an employee of a mining company and in which there was at least one child under the age of 18 years. Owing to the time at which the study was made—during the summer months—no families were in-

¹⁰ Investigation of Wages and Working Conditions in the Coal-Mining Industry: Hearings before the Committee on Labor, House of Representatives. H. R. 11022, p. 49. Washington, 1922.

cluded in which the father regularly farmed in the summer and worked in the mines during the winter, a practice said to be common in the neighborhood.

Families living outside company-owned towns enjoyed no greater household conveniences than those living "in camp." In fact, in some respects, especially as regards the more remote and isolated of the independent settlements, living arrangements were probably even more primitive than in most of the company mining towns. For example, kerosene lamps were in general use rather than the electric lights with which the majority of the company houses were provided. Also, water was invariably obtained from wells and springs, whereas in most of the camps families had the advantage of a central water supply piped to hydrants, even though the hydrants were outside the dwellings. Sanitary arrangements were about on a par with those prevailing in most of the camps; most families had privies of an insanitary type, and a few, as in the camps, had no toilet facilities. It should be noted, however, that the fact that there was less crowding together of families outside than in the camps rendered the dangers of insanitary living conditions relatively less.

Probably the most serious drawback to living outside the company town was the problem of securing a physician in case of illness. The independent settlement referred to as being located on top of a mountain was 15 miles from the nearest private physician, and without a telephone. The company doctor at the nearest mining camp was available on the payment of an extra fee, but had to be met with a horse at the foot of the mountain three and one-half miles from the settlement. A considerable number of the families interviewed in this as in the other independent settlements reported that they paid the customary deduction for the services of the company doctor; in some cases, however, especially where the family was relatively inaccessible, only the fee charged for a single man was deducted from the pay and the miner only, and not the entire family, was entitled to the doctor's services. A few families reported that they permitted the deduction but did not call the doctor on account of the distance; a few others stated that the company doctor seldom came when sent for, one father remarking that the family "didn't bother with him." Despite the fact, however, that in many cases physicians were not easily available, 28 of the 32 births reported in these families as having occurred in the community in which the families were living at the time of the interview had been attended by a physician.

Opportunities for schooling seemed to be identical for children living outside and for those within company towns. Some attended district schools located within the camps. Those living in inde-

pendent settlements had schools in no case more than a mile from their homes; children in families living in the open country, like many rural children, were somewhat less fortunate.

Opportunities for church attendance were somewhat better, if anything, outside than within the mining towns. Unlike most of the camps, every independent community had weekly church and Sunday-school services, and one had a weekly evening "song service."

Living in independent communities, in fact, appeared to have several distinct advantages. The greatest of these undoubtedly was the opportunity to own a home, and this was the reason usually given for living outside the company town. Over two-thirds of the families interviewed—50 families—owned their houses, and with the opportunity for individual expression which the ownership of property gives, the houses varied more widely in size as well as style, comfort, and general up-keep than did those in the camps. Some were much better than those to be found in the company towns, others were not so good, according to the prosperity and thrift of the tenants. The "box" house, roughly built of upright boards and papered with newspapers to keep out the cold, and, occasionally, even the rough log cabin, were found, as well as the good-sized, comfortable-looking dwelling surrounded by fruit trees and well-kept gardens. It is worthy of note in view of the dirty gray or drab maroon of many company-owned houses that a majority of the cottages owned by the miners living outside were painted light colors—yellow, and even pink and blue—and trimmed with white, and many were decidedly picturesque. Practically all the families interviewed had gardens larger than were possible for families living in camp, the amount of land varying from 2 or 3 to 100 acres. Many of the families had sufficient vegetables for winter use. Some commented on the difference the produce made in their standard of living and in their ability to save money; others spoke of the enjoyment which they derived from working in their gardens, especially as a change from work inside the mines. In fact, the possibility of having more land to cultivate was frequently given as one of the great advantages of living outside the mining towns.

Pride in the communities and a spirit of neighborliness were marked in some of the settlements, as might be expected from a group most of whom owned property and many of whom had been living in the same place for 10, 15, and even 20 years. As might be expected, also, of families living outside mining camps from choice, they were almost unanimous in their preference for life in the independent settlement. Many emphasized the feeling of security that owning their own homes gave them, especially in times of illness or slack work. "You don't have to move every time your man quits his job," said several of the women. Others commented on the

unhealthful conditions in the camps. "You can't never get a good breath down there, you're so close to somebody's privy," remarked one woman, adding, "There's lots of sickness there, too." "Last summer," testified another, "nearly every family in the camp had a case of typhoid. We had two cases. We decided it was too unhealthy a place to live and moved out, but this spring our boy died of typhoid and the doctor said we had probably brought the germs from camp." A father preferred living outside because there was "too much sickness in camp—never heard of anyone catching typhoid here." "We moved here," stated one of the mothers, "because it was a healthy place, had no saloons, but had a school and church." One mother who preferred the sociability of the camp commented on its "bad water." The crowding of camp life, with its mixture of nationalities, and parents' inability to choose the children's associates, were general complaints. "I like living where you aren't messed up with other people all the time, and where you can have a real garden, a cow or two, and chickens," said one woman. Another remarked in disgust that it was "so crowded in camp you can hardly get out of the scent of another's dirt." Another thought that it was "easier to bring up your children where you're by yourself." One mother objected to the gruesomeness of camp life, saying that they had lived within sight of the mine and as she sat at her sewing she could "always see them carrying out someone dead or crippled." Some of the women mentioned the conveniences of life in camp, such as a near-by water supply, and electric lights, but the majority, even the most isolated, said that they would not on any account return to the mining camps to live.





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JUL 14 1923

U. S. DEPARTMENT OF LABOR
JAMES J. DAVIS, Secretary
CHILDREN'S BUREAU
GRACE ABBOTT, Chief

STANDARDS OF PUBLIC AID
TO
CHILDREN IN THEIR OWN HOMES

BY
FLORENCE NESBITT



Bureau Publication No. 118



WASHINGTON
GOVERNMENT PRINTING OFFICE
1923



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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, February 28, 1923.

SIR: I am transmitting herewith a report on Standards of Public Aid to Children in Their Own Homes, which is one of a series of reports by the Children's Bureau in this field.

The investigation was made and the report written by Florence Nesbitt, at the present time a district superintendent of the United Charities of Chicago and formerly field supervisor of the mothers' pensions division of the Chicago juvenile court.

Ruth Bloodgood, of the social service division of the bureau, assisted Miss Nesbitt in the field study and also in preparing the material for the report.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

Hon. JAMES J. DAVIS,
Secretary of Labor.

LETTER OF TRANSMITTAL

Washington, D.C.

Dear Sir:

I am pleased to have your report on the progress of the work done during the past year. The results are most satisfactory and show a marked improvement in the efficiency of the various departments. It is particularly gratifying to note the success of the new system of bookkeeping introduced in the office, which has resulted in a more accurate and timely statement of the financial position of the institution. The work of the various committees has also been most commendable, and it is to be hoped that their reports will be of great value to the Board in its future deliberations.

Very truly yours,

Secretary

John A. [Name]

Secretary of Labor

STANDARDS OF PUBLIC AID TO CHILDREN IN THEIR OWN HOMES.

THE FIELD OF THE STUDY.

PURPOSE AND METHOD OF INQUIRY.

The purpose of this study was to collect material showing the results of experience in administering aid to children in their own homes in order that other agencies working out methods of administration and standards of relief and supervision might benefit by what has been accomplished in this field. The inquiry deals primarily with the standards of living maintained by the families receiving aid.

In each place studied, with one exception, the records of all families receiving aid at the time were examined, schedules¹ being filled out for each family. The case worker was then consulted, and additional information was secured from her. In Boston, data were obtained for only a selected number of the families, the total number being too large for inclusion in this study.

A smaller group of families was chosen in each place for intensive study, with special reference to standards of living. This smaller group was selected from the families then receiving aid who had been getting it long enough to have become adjusted to their incomes and to the requirements of the supervisory agent. One year of receiving relief was regarded as sufficient for this purpose, although two years were preferred where the work had been going on under the existing plans for a period sufficiently long to furnish enough families on that basis. A full list of current cases in which the aid had been granted for the chosen period was first secured. From this were eliminated those unsuitable for the purpose of ascertaining the standard of living, such as families living with relatives and not maintaining their own homes; those whose incomes were indeterminate or irregular to an unusual extent; those in which the mothers could speak no English or from whom for other reasons it was found too difficult to secure information; and those presenting behavior difficulties. Since it was usually impossible to visit all the families in the resultant list those to be intensively studied were then chosen so that they would be representative of the different elements of the population, the varying compositions of families, and the geographical distribution.

¹ For form of schedules, see p. 144.

The case records of the families selected were studied and each family was visited. Usually these visits were made with the case worker, and the persons best acquainted with the family situation were consulted. In addition, sessions of courts, boards, and committees granting the aid were attended, and statements of the ideal toward which these agencies were working were secured from those responsible for their administration.

TYPES OF ADMINISTRATION REPRESENTED.

Communities included.

In order to get material that would contain the most widely applicable suggestions, different types of administration were chosen and as good an example as possible of each was selected. Care was exercised to avoid places where the situation was unusual, and to choose instead communities similar in character to others in which the work was already being carried on or was being organized. The largest cities were not included, partly because an exhaustive study of the administration in one of them, namely Chicago, had been made for the Federal Children's Bureau in 1917.² The present study covers examples of the administration of aid in—

- (1) Large cities: Boston, Denver, and St. Louis.
- (2) A county composed of a large city and the surrounding rural population: Hennepin County, Minn., including Minneapolis.
- (3) A smaller city: Haverhill, Mass.
- (4) Counties composed of medium-sized and small cities, towns, and rural population: Westchester and Montgomery Counties, N. Y.; Northampton County, Pa.
- (5) A rural county: Yellow Medicine County, Minn.

Units of administration.

The unit of administration depended upon the political organization of the community. Three different units were represented in the places studied:

1. City or town: Boston and Haverhill, Mass.; St. Louis, Mo.
2. County: Hennepin and Yellow Medicine Counties, Minn.; Westchester and Montgomery Counties, N. Y.; Northampton County, Pa.
3. County and city coincident: Denver, Colo.

² The Administration of the Aid to Mothers Law in Illinois. U. S. Children's Bureau Publication No. 82, Washington, 1921.

Administrative agencies.

The following types of administration are included:

1. Administration placed by law in the juvenile court.

(a) Denver.—The investigation and supervision were delegated by the judge to the public department which administered outdoor relief for the city and county. He received a recommendation from them on each case.

(b) Hennepin County (including Minneapolis).—The judicial work was lightened by a volunteer committee of case workers, who went over the details of each case and made recommendations to the judge. Investigation and supervision were by the employees of the juvenile court.

(c) Yellow Medicine County, Minn.—The probate judge acted as juvenile-court judge. The county had not appropriated money to pay a probation officer, but the judge was assisted by a volunteer probation officer, who was employed by the local chapter of the American Red Cross. The work was under the general supervision of the State board of control through a local board of child welfare.

2. Administration by a city board of children's guardians.

St. Louis.—The work of aid to mothers with dependent children was included in the duties of the agent of the board of children's guardians, who, with a staff of assistants employed by the city, was responsible for all work with dependent children.

3. Administration by the public officials who administered outdoor relief.

Boston and Haverhill, Mass.—The work was under the supervision of the State department of public welfare.

4. Administration by a special county board.

(a) Montgomery County, N. Y.—The local administration was worked out in cooperation with the New York State Charities Aid Association, whose agent was also secretary of the county board of child welfare. The county shared the expense with the private organization. The State board of charities gave general supervision.

(b) Northampton County, Pa.—The administering board was called the "board of trustees to the mothers' aid fund." An executive secretary was employed at the expense of the county. The State department of public welfare had general supervision.

5. Administration by a county commissioner of public welfare.

Westchester County, N. Y.—The aid was administered by the county department of child welfare under the county commissioner, operating under a special State law applying only to Westchester County. The workers in this department were paid partly by county and partly by private funds.

Each of these types of administration has advantages peculiar to itself, as will be seen from the reports on the work of the various localities. It seemed entirely possible, under each plan, to work out an effective method of administering the relief, provided the matter was in the hands of honest and efficient officials.

LIVING STANDARDS AIMED AT BY THE AGENCIES STUDIED.

Most of the people actively engaged in the administration of aid to mothers with dependent children had given conscious consideration to the standards on which the homes for which they were taking this responsibility were to be maintained. The judges of the juvenile courts charged with making the grants, the members of the advisory boards or committees who passed upon the cases or made recommendations for their disposal, and the members of the staffs who were doing the work of supervision and investigation were interviewed as to their conceptions of the kind of living conditions that should be provided for the families. Most of the groups had well-defined ideas in regard to this matter. There was, however, one chairman of a committee who said that the conception of a definite standard was new to him; that members of his committee had been so occupied with the other aspects of their task that they had not thought of defining the way in which the families should be expected to live.

The expressions used most frequently in describing the standard which those consulted had in mind were: "The way in which a normal workingman's family lives;" "The way in which a workingman's family lives when he earns enough to support it in a normal way." Judge Edward F. Waite of the juvenile court of Hennepin County said: "The standard of living for the families where the mother receives aid should furnish everything necessary for the health and moral welfare of the children. Particularly should they be adequately fed, in order that they may grow up with strong, healthy bodies. The mother should not be away from home at work at any time when her children need her, nor do work that is beyond her physical strength." Judge Ben B. Lindsey of the juvenile court of Denver made a somewhat similar statement and added: "The care and training that a mother gives her children are the greatest service she can render, and nothing should be allowed to interfere with that." The officials were asked to describe the minimum standard to which they hoped to raise families previously living in a way that could not be considered satisfactory. The standards believed by the advisory boards and the members of all the staffs to be essential or desirable are summed up in the following paragraphs. These statements should not be interpreted to mean that higher standards than those described below were not permitted or encouraged among the families receiving aid, or that the wish of those who are quoted was to reduce all to a dead level in equipment and manner of living. This was by no means true.

HOUSING.

In Denver, and to a less extent in Minneapolis, the families were encouraged to live in the outskirts of the city, where it would be possible for them to have a four- or five-room cottage with yard and space for a vegetable garden and chickens and perhaps a cow or a goat for milk. This was felt to be especially desirable when the children were small. Yellow Medicine County was sufficiently rural in character for the average inexpensive home to be of this sort. In Westchester, Montgomery, and Northampton Counties, where there was much rural territory, the families in many instances had these advantages at the time of application for the grant, and no change was considered desirable. In Boston there had been an effort to move some of the families who needed special health care. The staff in St. Louis agreed that cottages were desirable, but the housing shortage made it impossible to get them for the families.

It was generally considered that the rooms needed by a family consisting of a mother with both boys and girls of school age, whether in a cottage or in a "flat" building, would include a kitchen, a sitting-room, and at least two bedrooms—one for the children of each sex—with one or more additional bedrooms in the case of larger families. The rooms should be light, clean, well ventilated, and in good repair. In the more crowded parts of the city special attention should be given to the ventilation of the bedrooms, each of which should have at least one outside window. There should be a toilet for the use of each family alone, which in the country or suburbs might be an outside one. A bathroom, while desirable, was not considered an absolute essential by any of the groups consulted. If there is no outdoor play space belonging to the building, there should be a place somewhere in the neighborhood where the children can play under supervision.

HOUSING EQUIPMENT.

In families containing older children, a sitting room devoted to the social life of the family was a part of the standard desirable to be maintained. In one city, where housing conditions were very poor, it was considered that this room might be used also for a bedroom, if a day bed were made a part of the furnishings. It was agreed that the sitting room should be furnished with a good floor covering of some kind, and at least a few comfortable chairs and a table, and that there should be provision for heating it so that its use would be possible during the winter.

There should be beds enough so that not more than two persons need occupy one. There should be sufficient bed linen to allow for a change while laundry was being done, and enough covering for comfort in the winter, when a window was open for ventilation. The St. Louis standard required a separate bed for a baby.

All agreed that there should be at least dishes enough so that each member could be properly supplied, with the family sitting down to meals together, and that there should be sufficient utensils in good repair to cook and serve a simple meal, the necessary equipment for laundry and cleaning, and receptacles for the protection of food materials. A sewing machine was considered necessary for a majority of the families.

Beyond this undisputed minimum of equipment there were other items about which there were differences of opinion—due largely, no doubt, to differences in climate and other conditions. In St. Louis, an ice box was very reasonably regarded as a necessary part of the equipment of the simplest household, and the board of children's guardians arranged for each family to be provided with ice. In Northampton County, on the other hand, cellars were common, and it was possible to keep food cold without ice. Likewise, a gas or coal-oil stove was regarded in St. Louis as a necessity for summer use, while the families in Denver suffered little discomfort in doing without one. A number of the Denver families, however, had summer kitchens.

FOOD.

Adequate food, particularly for growing children, was considered by everyone to be a matter of first importance, although the content of an adequate diet was not always clearly defined. The need of fresh milk was, however, recognized in all instances save one, and in most places a minimum of one pint per day for each child was considered reasonable. The daily use of vegetables or fruit was also accepted as a part of a minimum standard diet. Some workers believed that butter, and not a substitute, should be used, and that a small amount of meat should be part of the daily dietary. Others believed that a butter substitute might be used where the milk consumption was up to the standard, and that meat two or three times a week was sufficient.

CLOTHING.

It seemed more difficult to define a standard for clothing than for any of the other items. It was universally agreed, however, that clothing must be sufficient for protection and cleanliness, and comparable in appearance to that of the companions of the wearer. One judge spoke with pride of the fact that a child whose mother was receiving aid was not distinguishable by his dress from the other children of the school. The variations observed in this matter were more marked between different families in the same locality than between the families in the different localities. Former standards of living, national customs, and the resourcefulness and varying degrees of skill of the mothers were the chief reasons for these diversities.

INSURANCE AND SAVINGS.

Wide differences of opinion and practice were found in regard to the carrying of insurance and the possession of a savings fund. In more than half the places it was felt that a mother receiving aid should have a reserve fund, ranging variously from \$50 to \$400, from which to draw in case of illness or disaster. If the mother had this amount at the time she began to receive aid, she was permitted to retain it. Accumulation of a reserve fund out of the amount given for relief was nowhere permitted; but in some places if, by raising chickens, rabbits, or goats, or by engaging in some other small business, the members of the family earned more than had been expected of them, they were permitted to use some of the extra earnings to build up a reserve fund. This, however, could never go beyond the amount set as a maximum either by law or by a ruling of the administrative body.

One capable and energetic mother had been allowed to save \$300, with which to make a first payment on a small cottage for a home. It had been earned by side lines of work, carried in addition to what she was expected to do toward the support of the family. She said: "I could never feel right about receiving money like this and just spending it. I feel that I must make it produce something." At the time of the interview she was hurrying away to care for a mother goat with a day-old kid. She had bought the mother the year before for \$35, and had just had an offer of \$70 for her.

Another family, where three older sons had each accumulated small savings, had been able to make a first payment on a house. The mother felt that one of them might have deserted her if he had not had this incentive to help her make a home. In other places a reserve fund was not considered a necessary part of the normal life of a family. If the family earnings increased, the amount of aid was immediately reduced.

Insurance on an incapacitated adult was usually encouraged. The custom varied in regard to insurance on a healthy adult and on children—in most places it was discouraged. In Massachusetts, where a burial fund could be drawn upon through the overseers of the poor, it was considered that the families should not take out insurance. Hennepin County's budget did not allow for insurance on children.

EDUCATION.

In Northampton County, under the State law of Pennsylvania, if a child was doing well in school, his allowance did not necessarily stop when he became eligible for a working permit. In the other places public funds could not be used for carrying a child's schooling beyond the legal working age, although where the law permitted the gainful

occupation of children over 14 years of age, the provision as to allowances was sometimes interpreted liberally to mean that the eighth grade might be finished before the allowance was cut off. It was, however, felt that exceptional children and those not physically strong, even though they might be able to get working certificates, should be kept in school, and in all the places studied private arrangements had been made to this end in certain instances, but not in all that the workers had recommended, since the money for these special scholarships was not always available. Westchester County had a carefully defined policy in regard to this matter. Children between the ages of 15 and 16 years who were sufficiently advanced in school and physically strong enough to secure working papers might be permitted to remain in school if private funds could be found to pay the entire amount of the child's schooling and maintenance. Children over 16 years of age who were capable of making a contribution to the support of their families might remain in school only if the private fund was large enough to pay as well, in each case, the amount of the child's possible contribution.

In some places the question of reading matter in the home had received no thought; in others the daily or weekly newspaper was considered essential to the intellectual and civic life of the families, and they were definitely encouraged by the case workers to take one if there were any members of the household who could read it. In Denver the families were urged to have, in addition to a newspaper, some sort of household magazine for the mother. Everywhere the use of public libraries was encouraged.

CARE OF THE HEALTH.

There were no differences of opinion as to the urgent necessity of caring for the health of all the members of the family receiving aid. Remediable defects—defective eyesight, diseased tonsils, bad teeth, and other conditions—should be corrected, necessary operations being performed and sanitarium or hospital care provided. No estimate for care of the health was included anywhere in the family budget. In all the larger cities there were free clinics that gave first-class medical attention at little or no expense. In the counties where no such clinics were available it was necessary for the case worker to make arrangements for treatment as the necessity for it arose. There was evident need for an allowance for health care in some parts of Northampton County and in Yellow Medicine County, since free treatment was not always available and it was often necessary for the families to pay physicians and dentists.

RECREATION.

In every locality studied some attention had been given to providing recreation for the families. In the cities, summer outings were arranged for a large proportion of the mothers and their children. Outdoor play was considered a part of the normal life of the child, and it was regarded as essential that this play should be in a safe and clean place, which was free from unwholesome and dangerous influences. To provide children with simple play equipment—such as balls, skates, and some indoor games—was considered a part of the legitimate expense of the household. There was a difference of opinion and practice in regard to the desirability of allowing children to go to the moving pictures, but most of the officials and workers agreed with the staff at Minneapolis that children accompanied by their mother might be allowed to see a picture, selected by the latter, about twice a month.

The recreations of the child of working age were regarded as requiring special attention, and allowance was made for extra expenditures for his benefit, usually in the form of an allowance from his own wages.

The need of the mother for social life was recognized by most workers as an important aspect of the standard of family life. They felt that she should be encouraged to keep up her connection with friends, clubs, lodges, and church societies. In Denver, monthly meetings had been planned to help to fill this need of the mothers.³

³ See p. 49.

DETERMINING THE AID NEEDED.

The need of some basis for estimating the income necessary to cover the cost of adequate living was everywhere felt, and all the places visited had arrived at some plan of making the calculation. The overseers of public welfare of Boston and the board of children's guardians of St. Louis estimated living costs upon the number of persons in the family, irrespective of other conditions. In all the other localities a budget was calculated for each family, allowances being made for differences in the cost of housing, the ages of children, the physical condition of the various members of the family, and their occupations.

ESTIMATING THE FAMILY BUDGET.

The figures on which the family budgets were estimated were arrived at in various ways. The plan in most of the communities studied was to secure a schedule of minimum costs of adequate food, clothing, fuel, and household expenses from the nearest place in which special budget studies had been made. In the Eastern States the estimates of the home-economics committee of the New York Charity Organization Society, the New York Nutrition Council, and the Dietetic Bureau of Boston were used. In the Middle West budgets were based on the figures published by the Chicago Council of Social Agencies and those computed by different schools of home economics.⁴

In Hennepin County much help had been secured from the home economics department of the University of Minnesota. This department was able to give advice of special value, because of its connection with the university dispensary. Members of the faculty and students had taken an active part in planning family budgets in cooperation with housekeepers who had a member of the family under care at the dispensary for any disease necessitating the use of a special diet. This afforded contact with families living on low incomes, and helped to a conception of the economic problems involved in running a household on a basis of minimum costs. With this assistance, using the Chicago standard budget as reference but substituting local prices of commodities, the advisory committee on mothers' aid had worked out a schedule for estimating the budgets. After adoption by the committee and approval by the juvenile court, this schedule was considered in force until it should again be revised. The budget for each family was estimated according to this schedule

⁴Estimates on Family Budgets. (Typed.) New York Charity Organization Society, Home Economics Committee, 105 East 22d Street, New York City.

Good Nutrition and Adequate Food Allowances for the Family. (Price, 25 cents.) New York Nutrition Council, 144 West 13th Street, New York City, 1922.

Standard Budget for Dependent Families. (Revised every six months: Price, 25 cents.) Chicago Council of Social Agencies, 17 North State Street, Chicago, Ill.

by the investigator, and the estimate was checked by the committee before the amount of the grant to be recommended to the court was decided upon.

In Denver, the figures of the Chicago standard budget were used as a basis, and the work of adapting it to local prices and conditions was done by the supervisor of mothers' aid, with the particularly intelligent cooperation of the mothers receiving help. Many of the latter had kept careful expense accounts with this in view, and had helped in compiling the results.

In Northampton County the estimates for food and clothing were based on the schedule of the home-economics committee of the New York Charity Organization Society. This schedule quoted the prices of some of the commodities on which it was based, so that local prices could readily be compared with them. The State supervisor had done some work in comparing prices and had made recommendations to the local boards as to the figures suited to their communities.

The Massachusetts Department of Public Welfare had given careful consideration to budget estimates. At its request the Boston Dietetics Bureau had furnished material on costs of food and quantities needed, which were used in making estimates; practical lists of clothing had been worked out at the staff meetings of the mothers' aid department. The commissioner of public welfare had, in addition, appointed committees to furnish estimates on costs of adequate food, clothing, housing, and fuel. The director of the Boston Dietetics Bureau was the chairman of the committee on food costs, which had submitted a report on quantity and cost of adequate food. The committee on clothing, whose chairman was in charge of the minimum-wage department of the State bureau of labor and industries, had reported on clothing prices from nine different cities in Massachusetts. The committees on housing and fuel had not yet reported. A new budget schedule, prepared from the material collected by these committees, was under discussion.

In Westchester County the estimate for food was secured from the home-economics committee of the New York Charity Organization Society. The clothing estimates were based on those of the Chicago standard budget. Other items in the family budget were arrived at from local data.

In Montgomery County, the budget schedule furnished by the New York State Board of Charities was used. The staff of the State board had worked out this schedule by comparing budget studies made by agencies in different places. This plan was also used by the Minnesota State Board of Control, which supplied the schedule used in yellow Medicine County.⁵

⁵ For comparative figures used for estimating cost of food and clothing in the different localities, see *Tables I and II, p. 15.*

In most of the localities studied, the budget was estimated carefully for each family after the preliminary investigation had been completed and information was at hand as to any points in the family situation which would bear on living costs. The cash income and other resources of the family were subtracted from this estimate and the amount of aid given was based upon the difference.

The following budget schedules, which were in use at the time of the study will illustrate the plan:

SCHEDULE FOR ESTIMATING FAMILY EXPENDITURES.

Schedule used in Westchester County, N. Y., August, 1921.

Rent: Amount paid.

Food:	Per month.
Man.....	\$11.49
Man, elderly.....	9.75
Woman.....	9.97
Woman, elderly.....	9.75
Boy, 14-18.....	11.49
Girl, 14-18.....	9.97
Child, 10-13.....	9.10
Child, 6-9.....	7.37
Child, 2-5.....	6.94
Child, 10-24 months.....	6.50
Infant, under 10 months, if not breast-fed.....	According to formula.

Increase by 10 per cent, if advisable, for families where extra nourishment is required, such as tuberculous families, family of woman and one child only, family of woman and two children only.

Clothing:	Per month.
Man at work.....	\$6.94
Woman at home.....	5.53
Woman at work.....	7.50
Older girl at work.....	7.50
Older boy at work.....	7.44
Girl, 10-14.....	4.41
Boy, 10-14.....	4.54
Girl, 6-9.....	3.62
Boy, 6-9.....	3.62
Child, 3-5.....	2.67
Child, of 2 or under.....	2.78

Fuel:

Coal—

1. For one stove, one-half ton a month (hard coal).
2. For second stove, a quarter ton a month additional.

Kindling—Not to exceed \$1 a month.

Amount allowed for coal at the rate per ton charged in district. From November 1 to May 1 a second stove and kindling allowed. During the remainder of the year, only one stove allowed.

Light:

Where kerosene is used, \$1 a month.

Where gas is used, 1,000 cubic feet per month is allowed at rate charged in district, plus service charge.

Sundries: \$1 a month per person, with a maximum of \$7 for a family.

Insurance: Each family considered separately.

14: PUBLIC AID TO CHILDREN IN THEIR OWN HOMES.

Illustration of use.

Estimated budget for a family composed of mother and four children, all in normal physical condition:

Boy, 16 years, earning \$13 a week.	
Boy, 15 years, earning \$10 a week.	
Girl, 13 years, in school.	
Boy, 6 years, in school.	
Rent.....	\$25.00
Food.....	49.42
Clothing.....	30.41
Coal.....	7.50
Light.....	1.85
Insurance.....	4.77
Sundries.....	5.00
Car fare for boys.....	15.00
Total budget.....	\$138.95
Income: Wages of two boys.....	92.00
Deficit.....	46.95

Schedule used in Hennepin County, Minn., June, 1921.

	Food per week.	Clothing per month.
Man or boy 15 years or over.....	\$2.70	\$4.60
Woman or girl 15 years or over.....	2.25	4.60
Woman or girl 15 years or over, working in office or store.....	2.25	7.20
Boy 12-14, inclusive.....	2.25	4.00
Girl 12-14, inclusive.....	2.00	4.00
Child 9-11, inclusive.....	1.90	3.80
Child 6-8, inclusive.....	1.65	3.00
Children under 6.....	1.45	2.00

Fuel and light: \$8.50 per month.

Miscellaneous: Minimum, \$4.50 for families of three or less; where there are over two children allow \$0.75 for each additional child.

Maximum rent: \$15 per month.

Special diet in cases of tuberculosis, anemia, etc. Extra.

Where food budget is \$5 a week or less, allow 10 per cent extra.

Where food budget is \$10 per week or more, reduce 5 per cent.

Illustration of use.

Estimated budget for family composed of a mother with arrested tuberculosis, and three children: Boy, 12 years old; girl, 10; and girl, 8.

Rent.....	\$12.00
Food (\$0.95 a week allowed extra for mother).....	39.00
Clothing.....	19.40
Fuel and light.....	8.50
Miscellaneous.....	5.25
	<hr/>
	84.15

Comparison of budget schedules.

Comparison of the figures used for computing family budgets in the different localities indicated that they were all based on similar standards of living. The variations, as shown by the following tables, were slight in view of differences in local conditions affecting living costs and the fact that the schedules had not all been revised on the same date.

TABLE I.¹—Basic figures used in estimating the monthly² family food budget.

Age and sex.	Food costs per month.						
	Massachusetts.	Denver, Colo.	Hennepin County, Minn.	Montgomery County, N. Y. ³	Northampton County, Pa.	Westchester County, N. Y.	Yellow Medicine County, Minn.
For boy, 16 years or over		\$13.00	\$11.70	\$10.83-\$13.00	\$11.49	\$11.49	\$13.53
For man or girl, 16 years or over	\$12.35	10.40	9.78	9.10-10.00	9.97	9.97	9.93
5 years	12.35	13.00	11.70	9.75-11.90	11.49	11.49	13.53
6 years	12.35	10.40	9.78	7.80-8.90	9.97	9.97	9.93
4 years	12.35	13.00	9.78	9.35-11.25	11.49	11.49	\$8.49-10.65
4 years	12.35	10.40	8.67	7.35-8.45	9.97	9.97	8.13-9.21
3 years	11.92	10.85	9.78	9.10-10.60	9.10	9.10	8.49-10.65
3 years	11.92	10.00	8.67	7.15-8.25	9.10	9.10	8.13-9.21
2 years	11.92	10.85	9.78	8.45-9.75	9.10	9.10	8.49-10.65
2 years	11.92	10.00	8.67	6.70-7.80	9.10	9.10	8.13-9.21
1 year	11.92	9.55	8.23	8.25-9.55	9.10	9.10	8.49-10.65
1 year	11.92	9.55	8.23	6.95-8.00	9.10	9.10	8.13-9.21
8 years	11.92	9.55	8.23	8.00-9.30	9.10	9.10	8.49-10.65
8 years	11.92	9.55	8.23	6.95-8.25	9.10	9.10	8.13-9.21
9 years	11.92	9.55	8.23	(⁴)	7.37	7.37	6.33-8.13
8 years	11.92	8.70	7.15	(⁵)	7.37	7.37	6.33-8.13
7 years	11.92	8.70	7.15	(⁶)	7.37	7.37	6.33-8.13
6 years	11.92	8.70	7.15	(⁷)	7.37	7.37	6.33-8.13
5 years	8.03	7.60	6.28	(⁸)	6.94	6.94	4.79-5.97
4 years	8.03	7.60	6.28	(⁹)	6.94	6.94	4.79-5.97
3 years	8.03	7.60	6.28	1.45-1.90	6.94	6.94	4.79-5.97
2 years	7.58	7.60	6.28	1.45-1.90	6.50	6.50	4.79-5.97
1 year	7.58	7.60	6.28	1.45-1.90	6.50	6.50	4.79-5.97
Under 10 months	7.58	7.60	6.28	1.45-1.90	6.50	6.50	4.79-5.97
For man or woman					According to formula. 9.75	According to formula. 9.75	

This schedule used in St. Louis could not be included because it was based upon cost per family of so persons—three, four, five, etc.—instead of upon cost per individual member of the family. Schedules where the original food estimate was given by the week, the figures were multiplied by 4 1/2 the monthly estimate.

This schedule used by Montgomery County differentiated the allowances for boys and for girls of age and over, as follows:

Age.	Boys.	Girls.
7, 8, 9, 10 years	\$7.80-\$9.30	\$7.15-\$8.65
6 to 7 years	7.00-9.30	7.15-8.65
5 to 6 years	7.15-8.65	6.70-8.25
4 to 5 years	6.95-8.65	6.50-8.25

are if boy is working.

TABLE II.¹—Basic figures used in estimating the monthly family clothing budget.

Age and sex.	Clothing costs per month.						
	Massachusetts.	Denver, Colo.	Hennepin County, Minn.	Montgomery County, N. Y.	Northampton County, Pa.	Westchester County, N. Y.	Yellow Medicine County, Minn.
For man		\$7.00	\$4.60	\$4.00	\$4.34	\$5.94	
For woman	\$8.67	8.50	7.20	4.00	4.34	7.50	\$6.00
For man at home	4.77	5.75	4.60	2.00	3.25	5.53	4.00
For boy		8.50 up	7.20	4.00	5.41	7.44	(⁵)
For girl		8.50 up	7.20	4.00	4.34	7.50	(⁵)
4 years, not working	\$3.04-4.34	5.50	4.00	2.00	3.90	4.54	5.10
4 years, not working	3.04-4.34	5.50	4.00	2.00	3.90	4.41	5.10
3 years	3.04-4.34	5.50	4.00	2.00	3.90	4.54	5.10
3 years	3.04-4.34	5.50	4.00	2.00	3.90	4.41	5.10
2 years	3.04-4.34	5.00	4.00	2.00	3.90	4.54	5.10
2 years	3.04-4.34	5.00	4.00	2.00	3.90	4.41	5.10
1 year	3.04-4.34	5.00	3.80	2.00	3.90	4.54	5.10
1 year	3.04-4.34	5.00	3.80	2.00	3.90	4.41	5.10
0 years	3.04-4.34	5.00	3.80	2.00	3.90	4.54	5.10
0 years	3.04-4.34	5.00	3.80	2.00	3.90	4.41	5.10
6-9 years	3.04-4.34	4.00	3.00	2.00	3.25	3.62	3.75
3-5 years	2.82	3.75	2.00	2.00	2.60	2.67	2.85
10-35 months	2.17	1.75	2.00	2.00	1.74	2.78	2.00
Under 10 months	2.17	1.75	2.00	2.00	1.52	2.78	2.00
For man or woman					1.95		

¹ See note 1, Table I.

² \$5 up to one-fourth wages.

CALCULATION OF INCOME AND RESOURCES.

The amount of the family's cash income, such as total wages received and income from property interests or from other sources, could usually be reckoned. In some instances, however, it was difficult to ascertain the income; work was often irregular and the wages indeterminate, especially when any member of the family did day's work or piecework.

Resources other than wages or other regular cash income presented great difficulties. In each place visited many families drawing aid received gifts from friends, relatives, and charitable individuals. The value of these could not be accurately computed and their continuance could not be counted upon. It was nevertheless necessary to reckon these resources in some way at the time the amount of aid was decided upon. A plan frequently followed was to make a grant lower than the difference between the estimated budget and the known resources, leaving with the case worker the responsibility of keeping in sufficiently close contact with the family to know whether or not the supply of food, clothing, and other essentials was adequate.

A garden was one of the common sources of indefinite income and its value was variously estimated in the different localities. In Denver and in Northampton County a garden was estimated as covering a deficit of from \$2 to \$5 in the monthly income and in Hennepin County as being worth \$5 a month.

Budgets for the families owning farm animals were worked out individually, the cost of feed being deducted from the profit. A mother in Northampton County, who ran a small farm and owned chickens, pigs, and a cow, kept careful expense accounts, which made the calculation of her needs comparatively simple.

Everywhere the budget schedule was recognized as being only a rough guide in helping to determine the family needs. The case workers charged with the welfare of the family watched carefully for signs of undernourishment, inadequate clothing, and other lacks from which the children might suffer.

WORK OF THE MOTHERS.

Judge Lindsey's statement that the greatest service a mother can perform is the care and training of her own children was everywhere accepted. Nevertheless, the various administrative agencies were frequently confronted with the problem of a deficit in the family income and no apparent way of meeting it except by the mother's work, and in such cases it was not always found possible to carry out the ideal of giving first consideration to the welfare of the children. In each place studied there were some mothers who did not have as much free time to devote to their children as was considered desirable. Some mothers were working because there was no other way to get an adequate income for the family, although the physical strain of work in addition to the care of the house and the children was probably more than they could long endure. The work of the other mothers was leaving the children too much to their own resources or with oversight of doubtful character. In many instances, however, it was believed that some money-earning occupation on the part of the mother was a wholesome influence in the family life. When settling upon the amount which a mother might be encouraged to earn, the number and age of her children, her own physical condition, and her capability as a mother and as a wage earner were everywhere taken into account. Mothers who were physically able were in all the localities encouraged to do work at home, or even away from home at certain periods if the children could be properly cared for either in school or by a caretaker during their absence. In the choice of home work, care was exercised to avoid anything that might cause unhealthful conditions.

Over half (52 per cent) of the 942 mothers receiving aid in the localities studied were earning part of the family support. In the different cities the proportion of mothers who were doing some work varied from 21 per cent in Boston and Haverhill to 67 and 69 per cent in Denver and Westchester County. Six of the eight mothers aided in Yellow Medicine County, which is largely rural, were reported to be working. It seems probable that in Boston and Haverhill, where visits to the family were less frequent than in other places, some mothers not reported as earning money may have been doing so.

The number and proportion of the mothers in each locality who were helping in the support of their families are shown in Table III.

TABLE III.—*Proportion of mothers receiving aid who worked, by locality.*

Locality.	Mothers receiving aid.		
	Total.	Working.	
		Number.	Per cent. ¹
Total.....	942	493	52
Boston, Mass.....	195	40	21
Denver, Colo.....	73	49	67
Haverhill, Mass.....	23	7	.....
Hennepin County, Minn.....	207	122	59
Montgomery County, N. Y.....	18	6	.....
Northampton County, Pa.....	30	15	.....
St. Louis, Mo.....	94	54	57
Westchester County, N. Y.....	283	194	69
Yellow Medicine County, Minn.....	9	6	.....

¹ Not shown where base is less than 50.

TABLE IV.—*Mothers working at home and away from home, by locality.*

City or county.	Mothers working.				
	Total.	At home.	Away from home.	At home and away from home.	Not reported.
Total.....	493	151	292	37	13
Boston, Mass.....	40	12	25	.....	3
Denver, Colo.....	49	14	29	6	.....
Haverhill, Mass.....	7	4	3	.....	.....
Hennepin County, Minn.....	122	41	60	8	4
Montgomery County, N. Y.....	6	3	2	.....	1
Northampton County, Pa.....	15	10	2	2	1
St. Louis, Mo.....	54	22	23	9	.....
Westchester County, N. Y.....	194	42	134	12	4
Yellow Medicine County, Minn.....	6	3	3	.....	.....

EXTENT OF EMPLOYMENT OF MOTHERS.

Some of the mothers did gainful work at home. However, because of the difficulty in obtaining suitable home work, and the low wages usually paid, it was necessary for a larger number of the mothers to seek employment outside the home. Almost twice as many were employed away from home as at home—329 as compared with 188. The former group includes 37 women who were reported as employed both at home and away from home, while information as to the place of work was not reported for 13 of the mothers. The number of mothers receiving aid who were working at home and away from home is shown in Table IV, for each of the nine localities.

FORMS OF EMPLOYMENT.

The most usual forms of home work were laundering and sewing. A total of 188 mothers in all the places visited were reported to be working at home. Of these 28 per cent were doing home laundering,

WORK OF THE MOTHERS.

32 per cent home sewing, 12 per cent were keeping boarders or lodgers, 10 per cent were boarding children, and the remaining 18 per cent were engaged in such occupations as gardening, raising poultry, weaving rag rugs, doing beading, making lace, knitting, making paper novelties, baking, cleaning, and janitress service.

More than half of the 329 mothers who were employed away from home, worked by the day, at washing, cleaning, or housework, and almost a fifth did factory work. The next largest group included the mothers who did laundry work. The following list shows the per cent distribution for the various occupations of the 311 mothers who were employed away from home, for whom the type of occupation was reported.

	Per cent - distribution
Total.....	100
Work by the day.....	59
Factory work.....	16
Saleswomen.....	4
Laundry work.....	6
Sewing.....	3
Clerical or professional.....	1
Chambermaid.....	1
Waitress.....	1
Janitress.....	1
Canvassing.....	1
Poultry dressing.....	1
Work in restaurant.....	1
Other.....	5

TIME AWAY FROM HOME.

Wherever a definite rule had been adopted for the maximum amount of time a mother might spend away from home at work, a limit was set at three days a week. This limit had been recommended by the State supervisor of Pennsylvania and was also in force in Hennepin County and Denver. Such exceptions as were made were usually in cases where the mother was living with relatives who could care for the children in her absence. In some of these families the grandmother was really taking the chief responsibility for the care and training of the children, which the young mother was unwilling to assume. There were also instances where a mother took on full-time work in order to keep an older girl in school, the girl herself assuming the responsibility for the house and younger children during school hours.

It was considered that "short-hour" work was the best arrangement for the mother of children who were in school, even though it took her out of the home five days a week, provided the home could be so arranged that she would be away only during school hours. If the mother could not be at home at noon, lunch for the school

children was sometimes arranged for at the school or a nursery, or sometimes with a relative or a neighbor. Of the mothers working away from home, the proportions doing full-time and short-hour work are shown in Table V for five of the localities investigated.

TABLE V.—Number of "full-time" and "short-hour" days' work per week of mothers who worked away from home, by locality.

Locality.	Mothers for whom time at work was reported.														
	Total.	Number of "full-time" days per week.							Number of "short-hour" days per week.						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7
Total.....	262	22	52	60	24	7	34	1	3	6	2	6	7	35	3
Boston, Mass.....	13	1	5				1					1		5	
Denver, Colo.....	29	3	5	2	3		6	1		2		2	1	2	2
Haverhill, Mass.....	2	2													
Hennepin County, Minn.....	63	6	18	14	3	3	1		1	1	1		1	14	
Montgomery County, N. Y.....	2	1					1								
Northampton County, Pa.....	4	2					1			1					
St. Louis, Mo.....	25	2	4	2	2		5					1	2	7	
Westchester County, N. Y.....	121	5	20	42	16	4	17		2	2	1	2	3	7	
Yellow Medicine County, Minn.....	3						2								1

¹ 32 mothers in these groups worked an additional half day each week.

² Housework.

³ One a janitress, 1 doing housework.

⁴ Laundry work for hotel.

CARE OF CHILDREN DURING ABSENCE OF MOTHER.

In every place studied, definite plans were made for the care of the children in the mother's absence at work, and in the majority of cases this care was at least reasonably adequate. Children under school age were left at nurseries, with relatives, or with neighbors. The care given at nurseries was presumably satisfactory, while that of the relatives and the neighbors was frequently excellent but sometimes unsatisfactory. There were also families in which the older children were left to care for the younger. This arrangement was apparently satisfactory in instances similar to the following: Mother away four days at short-hour work; children of 5, 6, 10, 13, and 14 years. The case worker reported: "All in school. After school the girl of 14 cares for the younger ones until the mother's return. The home is always immaculate, and the children are well cared for."

Children of the same age vary greatly in their ability to look out for themselves, and it may be safe to accept the judgment of another case worker who said of two children, 9 and 10 years of age, whose mother worked away from home six days a week: "Both children are in school. They are unusually capable and get along very well by themselves until the mother returns, since a neighbor in the house keeps an eye on them." In most instances, however, it was believed necessary to have more definite supervision for young children, and *not to leave them so much alone*.

LIVING STANDARD ATTAINED.

In all the localities visited during the study the persons responsible for the amount of aid granted had a definite aim in regard to income. They wished to give each mother the help that would enable her to maintain a home which would afford at least the minimum of decent living conditions for herself and her children and would also permit her to be at home with them enough to give them the physical care essential for their health and development and the training necessary to bring them to a useful maturity. In most of the cities they were proceeding on definite plans⁶ in estimating the amount of aid needed, and were supplying it so far as conditions made it possible.

In many instances the aim of raising the income to the level of the estimated budget was not realized, for various reasons. In some families the income was indeterminate because of irregular wages or gifts; in others the records indicated that the income was a definite amount, the adequacy of which could be measured by the estimated budget. Denver had the highest proportion of families with adequate incomes, as measured by the estimated budgets. Eighty-three per cent of the families in that city had incomes equal to or slightly exceeding the estimates, and an additional 10 per cent had incomes that came within 10 per cent of the estimates. Only 7 per cent of the families, therefore, had deficits of more than 10 per cent.

Table VI shows for the different localities covered by the study the average income per person in families receiving mothers' allowances who maintained separate homes on a definite income, and had no boarders or lodgers.

TABLE VI.—Average monthly income per person in families receiving mothers' allowances, by locality.

Locality. ^a	Families receiving aid.	Total persons in the families.	Average monthly income per person.
Total.....	512	2,458	.....
Boston, Mass. ^b	108	525	\$16.21
Denver, Colo.....	47	214	20.39
Haverhill, Mass. ^c	18	84	18.43
Hennepin County, Minn.....	106	499	16.33
Montgomery County, N. Y.....	7	39	16.38
Northampton County, Pa.....	12	59	13.34
St. Louis, Mo. ^d	61	295	16.21
Westchester County, N. Y.....	153	743	19.64

^a In Yellow Medicine County, Minn., only one family maintaining a separate home with no boarders or lodgers was reported. The monthly income reported for this family (3 mother and four children) was \$77, an average for each person of \$15.40.

^b In Boston each family received, in addition to the cash allowance, one-quarter ton of hard coal every three weeks during the winter.

^c In Haverhill, as in Boston, each family received coal in addition to the cash allowance.

^d In St. Louis each family received free ice in summer in addition to the cash allowance.

^e See pp. 11-16.

LEGAL LIMITS TO AMOUNT OF AID.

Adequate aid was frequently prevented by provisions in the law, or by rulings of boards, which set a maximum beyond which the relief could not go, regardless of the circumstances in an individual case. Colorado and Massachusetts were the only States visited that were entirely free from such restrictions.

In Pennsylvania \$20 a month might be given for the first child and \$10 for each of the other children, making a total of \$40 to a mother with three dependent children. The budgets estimated in Northampton County for families of this composition where the mother was not working ranged from \$42 to \$62, according to the circumstances of the family.

In Minnesota the law under which most of the grants in force in May, 1921, were made limited the payments to \$15 for the first child and \$10 for each of the other children. Under that provision a mother with three children could receive only \$35, but under the amendment that went into effect in June of that year, which fixed the maximum at \$20 for the first child and \$15 for the other children, the allowance for such a family might be \$50. Budgets for families of this size in Minneapolis were estimated at from \$56.41 to \$82.31.

In St. Louis \$15 a month was the maximum amount that could be paid to a mother for each of her children, except that, with the concurrence of the city comptroller, more could be granted in special cases. This ruling would permit a grant of \$45 to a mother with three dependent children, while the estimated budget was \$71.50.

In New York the amount paid to the mother under the State law could not exceed the amount it would take to keep the child in an institution—\$5 per week per child, or \$65 per month to a mother with three dependent children. The estimated budget in Montgomery County for one family of this size was \$76.

Westchester County, which operated independently of the State mothers' allowance law, under a ruling of its county board had set the maximum amount of aid at \$4.50 per week per child. This made possible a payment of \$58.50 to a mother with three children. The estimated budget for a family of this size, when the mother was not working, ranged from \$61.86 to \$72.06.

The family consisting of a mother with three children is used for illustration because it occurred most frequently, 28 per cent of 885 families in six of the places studied being of this size. Where there was no source of aid other than the public relief, and the mother was unable to earn without neglecting her home and children, it was impossible for a family to be adequately cared for with the grant specified by the law in Northampton and Montgomery Counties, and in St. Louis unless special provision was made, and in Minnesota *even under the amended law.*

SICKNESS AND UNEMPLOYMENT AS CAUSES OF INADEQUATE INCOME.

Sickness in the family, which prevented the mother from earning the amount expected of her, was noted in many cases as a cause of inadequate income. In each locality where the grants were made through court action and could not easily be changed to meet temporary needs, several families were found whose difficulties on this account may be suggested by the following instances:

One mother with two children was expected to earn \$25 a month. She had been ill, and the total income for six months had showed an average deficit of \$9.19 each month. In another family two of the five children had had smallpox and the mother, who did home laundry, had been unable to earn the \$20 a month calculated for her. The total income for a six months' period showed an average deficit of \$9.10 for each month.

Unemployment, usually of older children who were expected to aid in the support of the family, was a frequent cause of inadequate income. The loss of even one week meant a serious deficit in an income which had no margin.

The deficits from these causes were impossible to foresee or to calculate. Some of the case workers suggested that each family should be encouraged to accumulate an emergency fund, which could be used to carry them over such periods. They felt that the maximum earning capacity, especially of the mother, should not be charged against the estimated budget, since the illness of any member of the family was likely to prevent her from working. When she was able to work for the full time agreed upon the extra money could be saved. In Westchester County four weeks' earnings only were counted against the monthly budget. This plan allowed the earnings of the extra days in the month as a margin for providing against loss of income through illness or other cause.

SOURCES OF RELIEF OTHER THAN THE ALLOWANCE.

The private charity organization society in Northampton County refused to supplement the aid given by the public agency, and in St. Louis it was not asked to do so. In Minneapolis and Boston they usually refused to supplement, although there were a few instances in each place where families known to the private society before receiving public aid were still being helped. Each refusal was based upon the belief that the public should give adequate aid, and that additional sources of assistance would have the tendency to retard the development of the public agency.

The help of church societies and clubs and of private individuals was enlisted in certain cases in each locality.

In Minneapolis the city department of public welfare assisted in 16 per cent of the families—cases where the total amount that could be granted under the provisions of the law was inadequate.

In Yellow Medicine County the county commissioners of the poor gave assistance to one family which was receiving a mother's allowance.

Aid from relatives was, of course, secured in all instances where it was possible. Court orders were sought against those legally liable under the laws of the State who were able to help and refused to do so. In some instances a mother with one or two children was encouraged to live with relatives; in others relatives could be of assistance by boarding with the family when they could not otherwise make a contribution to its support. Table 7 shows the percentage distribution of income from various sources for the families receiving mothers' allowances.

TABLE VII.—Sources of additional income in families receiving mothers' allowances, by locality.

Locality.	Percentage of families having income other than mothers' allowance.	Percentage of families deriving part of their income from each specified source.						
		Wages of mothers and children.	Income from lodgers, and boarders not relatives.	Board and other aid from relatives living with family.	Aid from relatives not living with family.	Charities.	Gifts from private individuals.	Miscellaneous incomes: Rents, compensation, etc.
Eight localities ¹	89	63	8	16	10	13	3	9
Boston, Mass.....	66	35	4	11	9	16	3	2
Denver, Colo.....	100	89	5	12	14	4	4	14
Haverhill, Mass.....	55	33	3	21	6	.....	3	6
Hennepin County, Minn.	96	71	11	19	12	25	3	16
Montgomery County, N. Y.....	89	56	17	22	17	11	.....	11
Northampton County, Pa.....	90	60	.....	17	6	(²) 12	3	10
St. Louis, Mo.....	93	79	15	10	11	.....	1	4
Westchester County, N. Y.....	95	81	3	16	11	11	5	9

¹ Yellow Medicine County, Minn., is not included because the number of families aided was small and very little information is available.

² In three families the wage earner was the grandmother. The mother in one family was dead; in the two others the grandmother worked, and the mother cared for the children and the home.

³ In eight families, or 27 per cent of all, gifts were received to make up the deficit, but it was not reported whether the gifts were received from charitable organizations, relatives, or other private individuals.

UNFAVORABLE CONDITIONS DUE TO INADEQUATE INCOME.

Overcrowding, undernutrition, homes bare of comfort, and children poorly clothed were some of the most obvious results of the income being insufficient to provide adequate living.

The A family consisted of the mother, a boy of 14 years, and a girl of 12. They were receiving aid to the amount of \$30 a month—the full grant for two children. The mother was not strong enough to do more than short-hour factory work, which brought in \$10 or \$12 a

month, making a total income of \$40 or \$42. The estimated budget for this family was:

Rent.....	\$8. 50
Food.....	29. 70
Clothing.....	14. 50
Fuel.....	7. 00
Household supplies.....	4. 25
Incidentals.....	1. 25
Total budget.....	65. 20
Income.....	42. 00
Deficit.....	¹ 23. 20

Only canned milk was used, and the children were drinking coffee. Some kind of vegetable was used daily, but almost no fruit was bought. The little girl, coming in from school, was noticeably poorly clothed. Her shoes were shabby but whole, and the badly faded gingham dress was clean. She was an intelligent, attractive child, and ambitious to become a teacher. The home consisted of a kitchen and two bedrooms. The floors were bare and the furniture scanty, with no attempt at a sitting room. The mother said that she still had enough of her original supply of household linen, dishes, and cooking utensils to make it possible to get along, but she would be able to replace nothing until she could earn more. The mother was ambitious for her children and had good standards of living. She was entirely uncomplaining and extremely grateful for the help that was making it possible for her to have her children with her. The boy was very frail, and there seemed small chance of his growing stronger without better food. The need for clothing would in a short time become acute.

An Italian mother had been receiving aid during four years for her son and daughter, who at the time of investigation were 9 and 14 years of age. The grant of \$35—as much as could be given for two children—was the only income of the family, except for irregular gifts. The mother was not strong enough to work. Besides having asthma, she was reported by the physician as suffering from malnutrition. Both children appeared to be frail and underweight; they had not been examined. Their food consisted of macaroni, bread, beans, and one quart of milk a day, with meat on Sunday and vegetables three or four times a week. The children were poorly dressed. The little girl, just home from school, wore a shabby, patched woolen skirt and a woman's shirt waist, which must have made her unpleasantly conspicuous among her schoolmates. The home was a very old cottage in poor repair—got at a

¹ Or 36 per cent.

cheap rental. It was, however, well ventilated, and the furniture was sufficient and in good condition.

Another mother was receiving a grant of \$95 a month for her six children, who ranged in age from 1 to 12 years. This was the only income, and the estimated budget was \$124. The boy of 3 years had rickets; the boy of 7 and the girl of 12 were underweight. Their clothing was poor. The mother slept with two of the children, and three others occupied another bed. The three rooms were poorly furnished. The mother tried to follow the dietetic instructions she had received and bought vegetables every day, but she could afford only two quarts of milk a day.

A family meal was impossible in some instances, because of lack of dishes, chairs, or a table of sufficient size. One family of six slept in only two of their three beds in the winter, because there were covers enough for only two. The same family had only two chairs. Insufficient bed linen and covers, and poor mattresses, were noted in a large number of homes.

INVESTIGATION AND SUPERVISION.

PRELIMINARY ACQUAINTANCE WITH THE FAMILY.

Most of the professional workers connected with the administration of aid to children in their own homes realized that service to a family should be conditioned upon its real needs (sometimes different from, and sometimes more extensive than, its apparent needs), and that the foundation of intelligent and effective service is a thorough knowledge of its problems and the resources at its command. However, for various reasons there were in the places studied great differences in the extent of this knowledge and in the manner of acquiring it.

A set of definite facts which had to be learned in order to determine whether the applicant belonged to the group defined by law as possible recipients of the aid, formed in all instances the foundation of the inquiry. The following items necessary to establish eligibility were usually verified from public records, and went far toward establishing acquaintance with the family:

1. The legal residence of the family in the State, the county, and the township or city.
2. Marriage of the parents, which must include verification of any former marital status of either parent.
3. Status of the father, whether dead, incapacitated, or deserting.
4. Dates of births of children.
5. Property interests (including insurance, amount of ready money, ownership of real estate).

While verifying the foregoing data the investigator inevitably gained much additional information concerning the present situation and the past history of the family and established a friendly contact with the family which made further service possible. In addition, the statements as to the wages of any working members of the family were almost always verified through the employer or by an examination of the pay envelope. The school records of the children were verified whenever a question of eligibility for work permits was involved, and in about half the places the records of all the children in school were secured. Other elements in the situation of the family were thoroughly dealt with in almost all the investigations. If the health of either the mother or the children seemed to require attention, a medical examination was arranged for during the course of the inquiry. St. Louis, however, was the only place where a physician's

examination for all the children was part of the routine of the preliminary investigation.

There were consultations with the relatives of the family in all the localities, but they varied widely in extent and in objective. In some of the places the relatives were interviewed or written to with the sole purpose of ascertaining the amount of contribution that could be secured from them toward the support of the family. In others there was a fuller recognition of the social value of family relationships, and relatives were consulted about the plans being made for the family, their friendly interest was enlisted even when they were unable to help financially, and their version of the story of the past life of the family was secured.

The pastor and the family physician were usually consulted, and in several places the applicant was asked for "references," who were interviewed. The value of this last procedure was questionable, except where care was exercised in accepting as references only persons who would be reliable sources of information.

In Denver and in Westchester County the past history of the family was very carefully recorded. The records covered the health history obtained from physicians who had treated the family; the relations to church, friends, and neighbors; the industrial life, including reports from former employers of the father, and of the mother if she had worked outside her home; and the relations of its members to one another and to the relatives. This knowledge of the family history was used in planning for the future with the mother or guardian. One group of children in the care of a grandmother was being given very special attention because of possible unfavorable heredity from a criminal father. In the case of a young mother who was so deeply discouraged that suicide was feared it was found from a study of her early life that she had been strongly influenced by an older sister with whom her contact was no longer close. This sister's help in making plans for the useful employment of the young woman resulted in the restoration of her mental balance. Wherever there was a history of tuberculosis in a family the diet and living conditions were planned with great care. Wherever the history indicated possible venereal infection Wassermann tests were given to the children. Special safeguards in the way of friendly interest and wholesome recreation were provided for mothers whose past showed moral weakness.

INTERVAL BEFORE GRANTING AID.

Where court action was necessary before a grant could be made the aid could not be available for emergency needs. In other places it could be granted with no greater lapse of time than was necessary to establish the need for aid and the eligibility of the family. For

instance, one family in Haverhill, Mass., had been granted an allowance on the very day the application was made. The desire of the administrative officers everywhere was for as rapid action as was consistent with a careful inquiry into the circumstances. The director of the child-welfare department of Westchester County in her report to the commissioner, stated:⁷

“We make every effort to begin a family’s allowance at the moment that they actually become destitute, so that they may not become undernourished, ill, hopeless, and discouraged. The task of keeping a family fit is easier and cheaper than that of putting them on their feet again, both for themselves and the public.”

The interval between date of application and date of grant was reported for five of the localities in which this study was made. Thirty per cent of the grants were reported to have been made within a month of the date of application. In 26 per cent of the cases 6 months or more elapsed between the application and the grant. In Boston 81 per cent of the allowances were granted in less than a month and in only 3 per cent of the cases was the interval as much as 6 months. In Hennepin County 44 per cent, and in Northampton County 27 per cent of the allowances were granted within 1 month. The percentage granted within so short an interval was much less in Westchester County, in St. Louis, and in Denver—12, 7, and 7 per cent, respectively. (Table VIII gives this information in detail.)

TABLE VIII.—Interval between date of application for and grant of mothers’ allowance, by locality.

Locality. ^a	Per cent of families with specified interval between date of application for and date of grant of mothers’ allowance.												
	1 Less than month.	2 1 month, less than 2 months.	3 2 months, less than 3.	4 3 months, less than 4.	5 4 months, less than 5.	6 5 months, less than 6.	7 6 months, less than 7.	8 7 months, less than 8.	9 8 months, less than 9.	10 9 months, less than 10.	11 10 months, less than 11.	12 11 months, less than 12.	13 1 year and over.
Six localities.....	30	17	7	9	6	5	5	4	3	3	1	1	9
Boston, Mass.....	31	12	2	2	1	...	1	...	...	...	...	...	3
Denver, Colo.....	7	6	1	9	4	8	12	3	3	4	6	1	36
Hennepin County, Minn.....	44	23	12	3	3	3	3	...	...	...	1	1	2
Northampton County, Pa.....	27	40	3	10	3	...	...	3	7	7	...	...	...
St. Louis, Mo.....	7	6	13	15	14	10	7	11	5	2	1	1	6
Westchester County, N. Y.....	12	17	13	12	10	7	7	5	5	4	1	1	6

^a Excludes Yellow Medicine County, since the date of application had not been recorded for the older grants; also Haverhill, Mass., and Montgomery County, N. Y. where the numbers were too small for the percentages to be significant.

^b Because of insufficient funds it was necessary to keep families on the waiting list for a considerable length of time.

⁷ Annual Report of Child Welfare Department of Westchester County, 1920, p. 14.

FREQUENCY OF VISITS.

In Minnesota and in Massachusetts the law required quarterly visits, at least, to the families, and a report concerning the conditions found. Most of the places studied had set for themselves a minimum standard for frequency of visits which was usually once a month for the families which did not require special care, but more frequent visits were regarded as necessary in many cases. The general opinion was expressed by the supervisor of boards of child welfare of New York State: "The amount of supervision needed by each family must be determined according to the individual case. Good standards of work require at least one monthly visit; really constructive work demands a number of visits."

SUGGESTIVE FEATURES.

Below are listed some features of administrative methods that may lend themselves to more or less general use.

1. Preliminary acquaintance with the family:
 - a. Outline of investigation, pp. 27-28; Denver, pp. 44-46.
 - b. Investigation in rural community. Yellow Medicine County, Minn., p. 76.
 - c. Individualizing the child, pp. 33-34.
 - d. Estimating family budget, pp. 11-15.
2. Care of health:
 - a. Physician's examination of all children. St. Louis, p. 80.
 - b. Weighing and measuring tests. Denver, p. 49; Westchester County, N. Y., p. 126.
 - c. Hospital and sanitarium care. Boston, pp. 95-96.
3. Education:
 - a. School reports. Yellow Medicine County, p. 71; Montgomery County, p. 137; Northampton County, p. 114; Denver, pp. 49-50.
 - b. Children of working age in school, pp. 8-9; St. Louis, p. 80; Northampton County, Pa., p. 114; Westchester County, N. Y., p. 125.
 - c. All mothers to learn English. Hennepin County, Minn., p. 67.
 - d. Instruction in home-making, pp. 34-35; Denver, pp. 52-53; Boston, pp. 96-98.
 - e. Reading matter in the home, p. 9; Denver, p. 53; Hennepin County, p. 67.
4. Case records:
 - a. Recording family history, p. 28.
 - b. Summary for advisory committee. Hennepin County, Minn., pp. 61-62.
5. Activities of advisory bodies:
 - a. Advisory committee. Hennepin County, Minn., p. 59.
 - b. County boards. Northampton County, Pa., p. 116; Montgomery County, N. Y., p. 132.
6. State supervision:
 - a. In Minnesota, pp. 56-57, 69.
 - b. In Pennsylvania, p. 110.
 - c. In New York, p. 131.
 - d. In Massachusetts, pp. 88-90.

SERVICE OTHER THAN RELIEF.

THE NEED FOR SOCIAL SERVICE.

Advisory boards and members of staffs in all the places studied had recognized the need of the families for service other than relief, and had tried to supply it. Much of this need originated in the low standards of living that preceded the removal of the wage earner which resulted in the depleted physical condition of the mother and children.

Former occupations were recorded for a total of 846 fathers in all the places visited. Of these, 27 per cent had been laborers, 22 per cent had been doing semiskilled work in factories and other places, 29 per cent had been skilled workers, and 9 per cent had been proprietors or managers in factories or shops, on farms, in trades, or in similar employments; the remaining 13 per cent were engaged in clerical or professional work or in personal service.

Weekly earnings were recorded for 680 fathers. Of these, 14 per cent had earned less than \$15 a week, 26 per cent had earned from \$15 to \$19, 26 per cent from \$20 to \$24, 27 per cent from \$25 to \$34, and 7 per cent \$35 or over.

Many families had been through hardships similar to those of the M's. The father, a miner, had broken down in health, and he had taken up a farm claim in a semiarid region of Colorado. He managed finally, after incredible hardships, to prove up on the claim. Undoubtedly the food was poor during this period, and during the time that followed when the mother, left a widow with nine children, worked in a factory all day and did the family housework—washing, mending, and cleaning—at night. When the children were weighed and measured after the allowance was granted, they were all found to be below the average normal weight for their age.

Families to whom expert medical advice had never been available were apt to accept poor physical conditions as normal. Defects that could have been corrected were often regarded as inevitable. If knowledge of possibilities and methods of securing treatment had not been used in their behalf by the case workers, children would frequently have been left to go through life crippled for lack of attention to feet or legs, or they would have been handicapped from the results of neglect of decayed teeth or diseased nose or throat. The loneliness of the mother left with the whole responsibility of a

family formed another urgent need for service. One well-educated mother said: "Raising a family alone is almost more than a woman can do. I should have never been able to bear it, if it had not been for the help of Miss A and Miss B," naming the case worker and the supervisor.

A large percentage of the women needed help in the care and training of their children, and in managing their incomes and their household affairs. They came for the most part from economic groups where it was necessary for a young girl to begin to work as soon as she became of legal working age. Usually this work had been in a factory or shop, and of such a nature as to give her little help in her home-making problems as a wife and mother. The home from which she came frequently did not furnish a desirable model on which to form her own. Sometimes the husband had taken the leading part in the management of the family finances, and still more frequently the discipline of the children had been regarded as his duty rather than hers. The fatherless sons, especially as they approached the period of adolescence, were often a source of great anxiety to the mother.

Mrs. X was one of the women who needed many different forms of service. Born in Austria of parents who had been well to do there, but who had never succeeded in adjusting themselves to conditions in America, she had left school at the sixth grade, although she was ambitious and had hoped to study nursing. Instead, she married a painter, who earned well and took good care of his family. He died, suddenly, of pneumonia. When an allowance was granted to Mrs. X, six months after the death of her husband, she was a deeply discouraged young widow of 30 years, with three children of 18 months, 4 and 6 years. She was nervous and upset and her teeth and eyes were in bad condition. Living in an isolated country place where it was necessary to carry for three blocks all the water for the household, she had not the spirit to keep her house clean or to try to manage her expenditures in an intelligent way. She spent \$60 a month for food when she first received aid, which made it necessary for them to go without clothing except such as they received as gifts. After six months' help in planning her expenditures she was getting adequate food for \$40—an amount still above the estimate in that locality for a family of this composition, but representing a great increase in efficiency on the part of the mother. Her teeth had been attended to and glasses secured. She was reading good books and regaining her hold on life. The children fortunately were healthy and did not need special attention. The mother did housework at a neighboring country place, and her employer took an intelligent and kindly interest in her and the *children*. When visited by the writer the house was in spotless order,

the beds were comfortable, and there was an air of a real home about the place. The record showed that a great deal of patient and interested work had been necessary to bring about these changes.

INDIVIDUALIZING THE CHILD.

In several of the localities studied there was conscious effort to differentiate the characteristics of each child in the family. While the family was the unquestioned unit of treatment, and there were many things in which its members necessarily had to share alike, an effort was made to ascertain as far as possible the individual needs of each child and to work intelligently with the mother, the teacher, and the health agencies to correct defects, to develop special gifts of personality, and to help to bring the child to a healthy, normal adult life, in which his happy adjustment to his surroundings would insure his usefulness to society.

In Westchester County the report of the first visit to a home included a description of each child. The following examples are taken from the case records.

Ellen, 15 years old, is very tall for her age, rather pale, and has dark hair and blue eyes. She has not particularly regular features (resembles picture of father), but has an extremely pleasant and intelligent face. Her manner is very agreeable and confident. She is her mother's "right-hand man" and seems to assume naturally a position of great responsibility in the household. Every evening she sits down to make a list of purchases for the next day, then buys all the provisions. She does all letter writing, etc., and attends to countless details for her mother. She went through the grade school, a few blocks from home, and is now in the second year of high school, to and from which she walks daily, about 2½ miles each way. She says she loves school and fully intends to graduate. When the mother was alone with the visitor, she said that she wants to keep some of her hardships from Ellen, and that she surely wishes to manage so that she may complete her schooling. Ellen had an ambition to go through college and study medicine, but now she plans to take a business course so as to earn more quickly. She is quite athletic, and thinks nothing of walking to and from school, of fetching all the water from a spring at the end of the property, or of playing baseball at school. Basket ball she found too strenuous. Her mother says that as a youngster she was not strong, and had hemorrhages, which she has outgrown. Only recently has she grown so tall. She has had whooping cough, mumps, chicken pox, and last winter she and all the children had measles. Her birth, in hospital, was normal, as was her infancy. Walked at about 14 months. The mother said that Ellen's whole life is in her home and school. She is intense in her interest in both. Last year she went to a neighborhood party where they played some kissing games; Ellen put on her coat and walked home.

Mary, 13 years old, had never been well. She has had all the children's diseases—measles, mumps, chicken pox, etc., and pneumonia. Her mother says there is always something wrong with her. She is not bright and not very helpful in the home. She sometimes washes the dishes but can not do much more. For four years she has attended the C— school, walking about 1½ miles each way. She and the two boys stay at school for lunch and get home about 4.30 or 5. She has never gone beyond the first grade. The mother agreed to the suggestion that she be examined at the mental clinic.

School reports were secured for children of school age who were granted pensions, in practically all the places studied, although with varying frequency and completeness. In three of the localities school reports for all the children were part of the record; in one place there were such reports for only 51 per cent and in the others for from 90 to 99 per cent of the children. In most of the places scholarships were obtained for children who were exceptional either in ability or in ambition. Frequently a child, because of frail physique, was kept in school after he had reached working age. Wherever the case work was most carefully done the exceptional children were looked after and given a chance for development.

In St. Louis each child was examined by a physician at the office of the board of children's guardians, and the record of the physical findings was filed at the office, where it could be referred to readily by the workers. If a child was below par physically he was kept under the supervision of the physician, who prescribed treatment and reexamined him at intervals.

Westchester County had the great advantage of a mental clinic of its own. This made it easy to examine any child who exhibited abnormal mental traits, and the record containing both the physical and the psychiatric findings was within easy reach of the case worker. After the examination a conference was held between the director of the mental clinic and other members of the staff, at which a plan of treatment was worked out. Not infrequently such an examination showed the home conditions and the mother's training to be unfavorable for one child of the group, while the others might be developing in a normal way. The generalization that a home suited to one child was necessarily suited to another was thus avoided.

In Denver the case record contained a child-study sheet for each child in the family. It was devoted chiefly to the physical condition and the health habits, but provided for the notation of school grade and intelligence quotient and for a description of the personality. Use of this sheet helped in the very careful study of the characteristics of each child. Weighing and measuring tests were given in some places.¹⁰ Physical defects were being corrected in all. Adenoids and diseased tonsils were removed, orthopedic treatment was given, and dental care was provided.

INSTRUCTING THE MOTHER IN HOUSEHOLD MANAGEMENT.

In concentrating on the welfare of the child the workers tried not to forget that the mother was frequently a young woman who had had small chance for training and development, and she was placed

¹⁰ For description of these tests in Westchester County, see p. 126; in Denver, see p. 49.

in touch with every neighborhood agency that could help her to become a better home maker and mother. In the cities there were infant-welfare clinics, nutrition clinics, and health classes; in the country instruction was given by the home advisers from the extension departments of the State colleges and universities. One mother living in a rural district was given a correspondence course in dress-making. A little later the home-economics extension worker from the State agricultural college formed in the neighborhood a dress-making class that she could join. Another woman living on a farm, where no classes were available, was able to get much help in the preservation of food materials for the winter from the literature which the case worker had had sent to her from the home-economics department of the State university. The visitors themselves gave a great deal of instruction in diet, management of income, and care of health. In most of the places they taught the mothers to keep expense accounts and to budget their incomes.

In Minneapolis each mother who did not speak English was given instruction in neighborhood classes or, if necessary, in her own home. In all the places visited similar work was being done. A Polish woman in St. Louis read with great pride from a "second reader."

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. The text also mentions the need for regular audits to ensure the integrity of the financial data. In the second section, the author details the various methods used for data collection and analysis, including the use of specialized software and manual verification processes. The final part of the document provides a summary of the findings and offers recommendations for future improvements in the reporting process.

WHAT THE AID MEANT TO THE CHILDREN.

A mother who was receiving aid in Northampton County spoke with emotion of an acquaintance who was about to break up her home and place her children in an institution. The woman was living in a neighboring county, which was not yet organized for the administration of aid to mothers, and she felt that she was unable to keep her children with her. The mother who reported the circumstance added: "I should never do that. We would have to live in one room, and I would have to work day and night if we did not have the mothers' pension, but I would keep the children with me anyway." Some of the children were no doubt saved from being brought up in institutions, others were rescued from undue hardships in the home, and still others from the demoralization caused by the haphazard and irregular relief given through the unorganized philanthropic impulses of the community. In one of the communities where there had been no organization of charity there was a marked contrast of manner between the women who had never received relief other than the mothers' allowance and those who had been dependent before receiving this regular aid. The first group showed normal self-reliance and dignity, while the others were lacking in initiative and self-reliance.

Among the mothers interviewed during the study were many similar in character and circumstances to Mrs. B, to whose needs the plan of the mothers' allowance seemed to be especially well adapted.

Mr. and Mrs. B, born of American parents, grew up on neighboring farms, met at a husking bee, and were married under much the same circumstances as the rest of the young people in the neighborhood. The home of each had already been visited by more or less misfortune. Mr. B's father, a chronic invalid, had been supported by his sons for some time before his death. Mrs. B's mother had died when she was young, leaving her the oldest of five children. She became housekeeper and mother for them, besides sharing in the work of the farm. Her whole afterlife was affected by this early period of overwork, which left her with varicose veins and a lowered resistance. The married life of the couple was, however, very happy. Mr. B became a trainman, with average earnings of about \$75 per month. They bought a city lot in the hope that they would eventually be able to have a home of their own, but much illness and the

taxes ate up the property. At one time all the children had typhoid fever and were so ill that two trained nurses were necessary to care for them. When the father died after a three years' illness, leaving five children of from 3 to 11 years of age, there was nothing left, except an insurance of \$1,000, already partly pledged for debts contracted during the long illness. His wife believed that the disease from which he died was caused by the nervous strain occasioned by wrecks which he had been through, but no compensation was received from the railroad.

Although still under 35 years of age when her husband died, Mrs. B was physically worn out. She took home work from a local factory, but was able to average only about 90 cents a week by putting in all the time that was left from the care of her family. At the end of a year her money was almost gone, and an allowance of \$45 was granted. She was allowed to retain a small reserve fund, from which for several years she drew for emergency and unusual expenses. The children were intelligent and ambitious. The oldest boy was in high school and earning enough for his own support at work after school hours. During vacation he worked full time for the same employer, from whom he was receiving good business training. The second child was a girl, not strong physically, who at 15 years was finishing her first year of high school. She was not strong enough to work after school hours, but it was felt that the question of her health made it desirable to keep her in school until she was at least 16. She wished to become a teacher. The self-respect of the family had been carefully guarded, and the source of their income, although known to a number of persons interested in them—the physician, the boy's employer, and others—was not common knowledge, and Mrs. B believed that the children had suffered no humiliation because of it.

The contrast that exists between many homes struggling along with no such aid and one in which it is being adequately administered was brought out by Mrs. N in telling of her own childhood. "I say thank God for the mothers' pension. My mother says she would not have me take it, but I think I ought to be thankful that I can live in a country where they have it. My father died and left my mother with nothing to bring us up on, and we had no clothes and never saw the inside of a school. It was running around without enough clothes then that gives me the poor health I have now." She was energetically sewing as she talked, and the two boys of 3 and 5 who were playing around her showed by their clean and well-mended clothes that they were not sharing the fate she had suffered from as a child. As further proof that they were being properly dressed, she showed the visitors the comfortable woolen

underwear she had made from mill ends bought from a woolen mill in the neighborhood.

Mrs. N's hard childhood had been passed in Scandinavia, whence she emigrated as a young girl to become a domestic servant in America. At the age of 20 she married a promising young carpenter. Her health had been poor ever since her childhood, and for a time after her marriage the doctors had thought that she could not live. This made it hard for the young couple to get ahead and start buying a home. They had undertaken to buy one, however. On the outskirts of the town, where the streets were unimproved and the ground cheap, the father had built, almost entirely with his own hands, the four-room cottage in which she and the children were living. He had died suddenly of influenza, leaving the house not entirely finished, and heavily mortgaged. Eight months later, the mother began receiving aid to the amount of \$35 per month, and she did enough home washing to meet the deficit in her budget.

The change in home conditions brought by granting aid and giving the service which should accompany it, was strikingly illustrated by the S family, who came to the attention of the officials administering allowances through the school. The teachers reported that the children were irregular in attendance, habitually tardy, and that they were poorly clothed and appeared to be neglected. Their school work was poor, and they frequently fell asleep over their lessons. Investigation showed that the father had died the year before, leaving little to his wife and four small sons except the heavily mortgaged ramshackle house in which they lived. They earned a scanty living by selling papers. The mother was frail, and she and the children were out in all kinds of weather, often in rain-soaked shoes and too thin clothing. They were up early in the morning to sell and were often out until late at night. It was six years later that the writer saw them in a comfortable homelike flat. The oldest boy held a fairly good position and was going to night school. One boy was in high school, and the others had good grade-school records.

With the sudden death of the husband want had come quickly to many of the women and found them unprepared to meet it. They did not know where to turn or how to adjust themselves to the situation.

One brave-spirited woman with six children had tried to struggle along with what she could make out of keeping a confectionery store, at which she hoped that school children would buy. She had no business training, and things went very badly. There were days when her own children came from school to find not even bread, and she saw them cry with hunger. But it was only when a kindly neighbor, suspecting the truth, said to her, "Look me in the eye and

tell me whether you have had anything to eat to-day," that the truth came out, and public aid was arranged for the family.

Of another widow whose husband had died during an epidemic, a friend told the case worker during the investigation: "She is so independent that she would not let her best friends know that she is in need. I am afraid that often there are times when they go to bed hungry."

The neighbors admired the pluck of a young wife who went ahead with the farm work when her husband's death from tuberculosis left her alone with three small children. They did not realize that she was in danger, until her health broke with the strain of lifting heavy milk cans. When she was given a mother's allowance she was overjoyed to learn that she might keep her farm home, suitable arrangements being made for lightening the work. She wanted country life for her children, believing that she could in that way save them from contracting their father's disease.

A grant of aid given promptly, with a reasonable assurance of its continuance and accompanied by the sort of kindly service which was being given to a greater or less extent in all the communities where the study was made, was believed by all the officials and workers to be the best possible way in which to meet such a situation as that in which a mother of young children, without resources, finds herself when deprived of the support of her husband. The most effective help which the community can give to mothers who, under these adverse circumstances, are using their best endeavors to bring up their children to be useful and self-respecting citizens is just such a grant, which will secure to them a regular income and relieve them of at least a part of the economic pressure.

SUMMARIES OF METHODS IN NINE LOCALITIES.



DENVER.

Denver had in 1920 a total population of 256,491, of which 37,620, or one-seventh, were foreign-born whites. Of these, the largest number (14 per cent) came from Russia, and there were gradually decreasing percentages from Germany, Sweden, England, Ireland, Canada, Italy, Austria, Mexico, Poland, and a large number of other countries.

ADMINISTRATION.

Aid to mothers with dependent children was administered in Denver under a State law called the "compensation to mothers act."¹¹ It permits the judge of the juvenile court to enter an order on the city and county bureau of charities for any amount that he may think necessary to enable a parent or other person whom he considers a proper guardian for a dependent or neglected child to give to the child the care needed. The law vests in the judge the duty of appointing persons to investigate applications and supervise families receiving this assistance. The secretary of the bureau of charities of the city and county of Denver had been appointed for this service, and the work was being done through that office.

The bureau of charities.

The bureau of charities of the city and county of Denver, functioning under the department of health and charities, administered all outdoor relief from public funds, including pensions for the blind. It could give relief only to legal residents of the county, but was free from legal restrictions as to the amount and kind of relief in any individual case. Although hampered by lack of funds, it had for this reason been able to develop during the past 10 years a high standard of social case work. All employes of this bureau¹² were appointed by the board of charities subject to the approval of the mayor and of the director of the department of health and charities. There were no competitive examinations for these appointments.

The city was divided into five districts, and the field work in each was done by one of the district visitors. Along with her other duties, each visitor investigated every application for a mother's allowance that originated in her district; but after an allowance

¹¹ Colorado Laws, 1913, p. 694; 1919, ch. 160.

¹² The employes were: Executive secretary, assistant secretary, supervisor of mothers' compensation, supervisor of homeless men, five district visitors, registrar, bookkeeper, and two stenographers.

was granted the supervision of the family was cared for by a sixth social case worker, who was assigned exclusively to the supervision of mothers' compensation cases.

Equipment of the workers.

The supervisor of mothers' allowances had charge of all the families receiving aid. She had been chosen from the staff because of her special fitness for this particular work and her interest in it. A college graduate, with experience in homemaking and the training of children, she had been with the bureau for three years. The secretary of the city bureau of charities devoted a part of her time to the general direction of the work. She was a college graduate, and had been director of case work in a large charity-organization society before coming to the bureau six years before. The district visitors, who did the general work of the bureau and who made the investigations of applications for mothers' allowances, were all trained case workers.

Records.

The record kept of each family was similar to those in use among the private organizations affiliated with the American Association for Family Work. They were unusually full and well written.

Children eligible for aid, and amount of grant.

The Colorado law was a blanket one, which made no restrictions beyond that of the dependency of the child in question, the residence in the county of the parent or guardian, and the ability of the latter to make a suitable home for the child, provided an income was assured. Ownership of a home was not considered a bar. It was possible to make the grant not only to a mother but to any person whom the judge might consider a proper guardian for the child. In 3 of the 73 families granted aid at the time of this investigation the mother was dead—in one of these cases a grant of \$50 was made to a grandmother who was caring for a family of four children; in another, a grant of \$25 was made to a grandmother who was caring for three; and in the third instance an aunt with five children under her care was paid \$55 a month. Among the applications which had not yet been acted upon were two from fathers who were widowers.

The amount to be granted the individual family was determined by the family's necessity, subject to the limitations of the appropriation for the purpose.

Procedure in granting aid.

Application was made by the mother at the juvenile court on a blank provided for the purpose. This blank covered a full statement of property owned, insurance received, money in the bank, *income including wages of any employed member of the family, and*

addresses of all relatives of the first degree and of the landlord. These facts were sworn to by the applicant. The blank was then sent to the city bureau of charities for inquiry into the circumstances of the family, and the following facts were verified from public records or other reliable sources:

1. Legal residence of the mother in State and county.
2. Marriage of parents, including former marital status.
3. Status of father—his death, incapacity, or desertion.
4. Dates of birth of children
5. Property interests, including insurance, amount of ready money, ownership of real estate, etc.
6. Wages of employed members of the family.
7. School records of the children.

The additional sources of information habitually used were:

1. Other agencies to whom the family had been known
2. All the relatives of the first degree.
3. Physicians who had treated the family.
4. Former employers of any member of the family.
5. References given on the application by the mother.

The health history was very carefully looked into. If there had been a serious illness or an operation the physician in the case was consulted. A thorough physical examination was made of all members whose health was questionable and the findings were included as part of the record. An unusually complete family history was secured and recorded. It covered the conditions under which the father and mother grew up, met, and married—their work records, character, education, and training; the main facts in their lives after their marriage—habits, standards of living, relations with church, relatives, friends, and employers. The relatives living in Denver were visited in order to secure their help in getting the main facts of the family history, and their financial standing was ascertained as well as their attitude toward the dependent family and their willingness and ability to help in ways other than financial.

When there were no funds available for a grant of compensation a visit was made to the applicant, and the needs of the family were met out of funds for poor relief or the family was referred for aid to one of the two private organizations in the city that gave relief. When funds became available—which at the time could happen only when a family already on the list ceased to receive compensation—the case was brought into the juvenile court, and the results of the investigation were submitted to the judge, with a recommendation. The amount of the grant recommended was based on the difference between an estimated budget of family expenses and the income which the family had, or might be expected to have, under the plan which had been worked out with them during the investigation. The family budget was calculated according to a schedule adapted

from the one published by the Chicago Council of Social Agencies. In making the adaptation, prices on which the Chicago figures were based were compared with those in Denver, and actual family expenditures (which were being recorded by a number of reliable families) were used in testing the accuracy of the schedule.

The hearings were held in the judge's chambers, where also were heard juvenile-court cases. The mother accompanied by a representative from the bureau of charities appeared before the judge, but the children were not required to be present. She might ask for a larger grant than had been recommended. This the mothers seldom did, since the amount of the recommendation in each case had been carefully worked out, always with her, and it usually had her approval. Payments were in semimonthly installments. The mother called for the warrant at the office of the city bureau of charities, then called for her check at the office of the city treasurer. Congestion in these offices was avoided by the expedient of paying the mothers on different days.

THE FAMILIES AIDED.

Children benefiting by grants.

There were 224 dependent children in 73 families who were receiving aid through mothers' allowances in June, 1921. Besides the 224 children aided, there were 30 older children in the homes, making a total of 254 children at home in the 73 families. The number of children receiving pensions in each family ranged from one to eight, as shown in the following:

Number of children aided in family.	Number of families.
Total.....	73
One child.....	8
Two children.....	20
Three children.....	24
Four children.....	8
Five children.....	9
Six children.....	2
Seven children.....	1
Eight children.....	1

The ages of the 224 children receiving aid are shown in the following list:

Ages.	Number of children.
Total.....	224
Under 4 years.....	19
4-5 years.....	26
6-7 years.....	34
8-9 years.....	33
10-11 years.....	41
12-13 years.....	11
14-15 years.....	25
16-17 years.....	5

Causes of dependency.

In 62 of the families dependency was caused by the death of the father, in 3 cases the father was insane and in an institution, in 2 the father and mother were divorced, in 2 others fathers had deserted their families, and 1 father was in prison. The causes of dependency in the other 3 cases was not reported.

Nativity of the mothers.

Half the mothers (36) were of foreign birth. Of these 12 were born in Russia, 6 in Ireland, 4 in England, 3 in Canada, 3 in Italy, 3 in Sweden, 2 in Austria, 1 in Germany, 1 in Rumania, and 1 in Scotland.

Inadequacy of funds.

Only 73 families were receiving aid in June, 1921, the appropriation made by the city council being inadequate to care for all the families eligible for the relief. A tax levy of one-tenth of a mill was voted to care for the 1921 work. This was expected to yield about \$35,000 for the year, a sum which would not quite cover expenditures at the rate for June. During that month, \$3,015 was paid to the 73 mothers for the support of the 224 dependent children. Because of lack of funds no application made later than June, 1920, had been granted. There were on the waiting list 82 families with a total of 227 dependent children. If, as in the past, 25 per cent of the applicants were found ineligible, relief for the families entitled to it, at the average grant in June, 1921, of \$13.40 per month per child, would require an additional appropriation for the year of approximately \$27,000, while a further considerable appropriation would be needed for the relief of those families becoming eligible during the last half of 1921.

This inability to secure grants of compensation for all families who came within the provisions of the law made it necessary for the city bureau of charities to give relief to many mothers for long periods of time, often for a year or over, out of funds allotted to poor relief, before it became possible to get them mothers' compensation. It was not generally the policy of the bureau to give cash grants when administering poor relief, so that being cared for in this way meant receiving aid for the most part in kind. This form of relief is not well adapted to the care of the family of a widow of good character and ability, whose period of needing aid will necessarily be long because of her dependent children. There can be no question that independence of spirit and self-respect are more easily preserved under a system of relief which gives at regular intervals a stated amount on which the mother may learn to administer her household.

ASSISTANCE GIVEN.

Allowances.

The amounts of monthly allowances given to the 73 families were as follows:

Monthly allowance.	Number of families.
Total.....	73
\$20-\$24.....	6
25- 29.....	12
30- 34.....	5
35- 39.....	3
40- 44.....	17
45- 49.....	5
50- 54.....	12
55- 59.....	1
60- 64.....	8
65- 69.....	1
70- 74.....	3

Service to the families receiving aid.

The contact of the supervisor with the families receiving aid was close and friendly. She had a short interview at the office with each mother twice a month when the warrants were given out and aimed also to visit each family in the home at least once in two months although this visit was sometimes omitted in the case of well-known families where the other contacts showed that conditions were satisfactory. Those needing special attention were visited more frequently.

The number of visits recorded as paid to each of the 73 families during the six months' period preceding June 1, 1921, was as follows:

Home visits.	Number of families.
Total.....	73
Less than three.....	15
Three.....	14
Four.....	20
Five.....	6
Six.....	7
Seven to ten.....	11

Relationships with the mothers.—The spirit of the work was thoroughly democratic and the personal dignity and self-respect of the mothers were carefully fostered. Both the judge of the juvenile court and the workers of the bureau made them feel that there was no cause for humiliation in their being forced by misfortune to receive from the public this help in the upbringing of their children. Such treatment seemed to awake in them a feeling of responsibility toward the acceptance of the aid. Of three mothers who came into court during May, 1921, to have their grants revoked, two had them-

selves taken the initiative for this action. They felt that it was possible for them to get along without the grants, and knew that many other mothers were waiting for the allowances.

During the year before this study there had been formed an advisory council consisting of seven of the mothers, which met once a month with the executive secretary and the supervisor of mothers' allowances. This council took up questions relating to all the families—such as the schedule for estimating the family budget, questions of household management, and recreation plans for the children. In the spring it had sent out a request for each mother to send in a record of meals served for a period of two weeks. These had been received, and were made the basis of discussion at one of the meetings to which all the mothers were invited. Such meetings were held occasionally and conducted by a president elected from their own number. Their purpose was partly recreational. There was usually a program of music and speaking, followed by a social hour.

Child welfare.—The city bureau of charities regarded the mothers' compensation department as a department of child welfare, and the work of the supervisor was directed chiefly to the end of making sure that the children were having wholesome living and growing conditions, with opportunities for normal mental and moral development. She tried to individualize each child in the 73 families, and in the attempt to do so had devised a child-welfare sheet for recording habits and conditions.

Weighing and measuring tests.—Weighing and measuring tests had been started and with the assistance of a nurse from each of the three local organizations giving nursing service, 188 of the 224 children had been weighed and measured. The children found underweight were being examined by a physician, and measures were being taken to correct remediable defects, so that the children would be in condition to develop normally. Tonsillectomy had been advised in 14 cases, the operation having already been performed in 3 cases and the date set in 4 others. There were defective teeth in 40 instances; these were being taken care of as rapidly as possible.

The supervisor talked with the mother about the health habits of each child, covering the points indicated on the child-welfare sheet, and planned with her changes necessary for the child's improvement. She hoped that a nutrition clinic would be available later for children who failed, under this treatment, to attain normal physical development.

School and employment.—The school progress of each child was watched, and the supervisor kept in touch with the teachers, so that irregular attendance or poor records of any kind could receive imme-

ciate attention. When the child was legally able to go to work the question of the desirability of his doing so and the sort of employment he was to enter received careful attention. Private scholarships were sometimes obtained to keep especially promising students in school after they had become eligible for working certificates, since it was felt by the department that the public funds could not be used for the purpose. This part of the service was adjusted carefully to the needs of the individual. A bright girl ambitious to become a teacher received not only scholarship money but a great deal of help in planning her high-school course. A well-grown 14-year-old boy with mechanical ability, but uninterested in school, was permitted to stop school at the seventh grade to enter a machine shop. A frail girl, who had formerly been tuberculous, was kept in school until she finished the eighth grade at 16 years. She was then found work caring for children in a place where health conditions were favorable, instead of being left to drift into a factory as she inevitably would have done if left to her own devices.

STANDARDS OF LIVING.¹⁴

Characteristics of the families visited.

Visits were made to 23 homes, and an office interview was had with one mother who was living temporarily in a tent. A full interview was taken with each mother, covering the points reported upon below. The families were chosen¹⁵ mainly from those who had been receiving compensation for two years or more, a few families being added who represented certain nationality groups or a particular set of circumstances—such as the death of the father during the epidemic of influenza in 1918.

Of these families, 1 had been receiving aid for something over six years, 3 had been aided for five years, 3 for four, 5 for three, and another group of 5 for two years, while 6 families had been aided for one year, and 1 family for less than a year. All the mothers spoke English well enough to carry on an ordinary conversation. Ten of them were born in the United States, 1 being a negro. Of the 14 mothers of foreign birth, 4 were born in Russia, 3 in Ireland, 2 in Sweden, and 1 each in Austria, Canada, England, Germany, and Scotland. Families of from 1 to as many as 10 children were represented, except that there was no family with 8 children. There were 9 families with 5 children, 6 families with 2, and 3 families with 3 children. In 8 families there were children too young for school; in 11 families older children had left school and were working to help support the family; in 3 other families an older child was working after school or on Saturdays.

¹⁴ Data were secured through home visits by the writer.

¹⁵ For general method of selection of families, see p. 1.

Housing.

The bureau of charities encouraged most of the families to live outside the crowded parts of the city. Among the 23 homes visited 13 were in cottages with a yard and garden, though most of them had not as much ground space as the home of Mrs. D, an Austrian widow, who with her five boys lived in the outskirts of the city, several blocks from the end of the street-car line. Their four-room cottage had enough ground surrounding it for a large garden, a chicken yard, and a shed. The shed was for a cow, which furnished milk for the neighbors as well as for the family. There was a root cellar where the mother stored potatoes, carrots, beets, and other winter vegetables, of which she raised enough for the year. It was a long trip into the city, but her ambitious boys of 15 and 17 took it not only to go to work but to attend clubs and evening classes. They could get fishing and swimming within a few minutes' walk from the house.

Another cottage, located much closer to the city but on a quiet street, was kept in spotless order by the Russian aunt of five orphaned children. It had four well-lighted rooms and a summer kitchen, and was set in a well-kept grassy lawn, with a garden at the rear. The water was carried from a well in the yard; the toilet was outside.

Ten of the mothers owned the cottages in which they lived, and the families took great pride in improving them. The other 11 families in the group visited were living in apartments or "terraces." The terraces, only one story high, had three or four rooms, built one behind the other, two or three terraces being built in a solid row. In one case, the middle room was without an outside window; the other terraces and the flats were fairly well lighted and ventilated.

Household equipment.

In all except two of the homes visited there was a pleasant sitting room with simple furniture, usually a rug or carpet for the floor, comfortable chairs, a table, occasionally a few shelves with books, and in a few instances a piano. The houses were heated by stoves—a cooking range for the kitchen and a heating stove for winter use in the sitting room. Nine of the houses had gas light and a gas plate or range for cooking. A few with no gas had a summer kitchen, which mitigated the discomfort of cooking on the coal range during the hot weather, which in Denver was a comparatively short season. There were electric lights in 12 of the houses, and 10 of the housekeepers had an electric iron as well. In 17 homes there were enough beds to allow one for each two persons in the family, furnished with covers enough to make open windows in cold weather possible, and with enough linen for cleanliness. Sleeping arrangements in the

other homes were less comfortable. Six of the mothers were sleeping with two of their children and four had insufficient covers or linen. The kitchen equipment was in practically all instances sufficient.

Food.

Selection of food showed that careful instruction in diet had been given, since a much larger proportion of the women were making a wise choice than could be expected from a group who had no special training.

Among the menus handed in were these from the mother of nine children, two of whom were working:

BREAKFAST.	DINNER.	SUPPER.
<i>Monday.</i>		
Cream of wheat for 6. Toast and butter for 4. Coffee for 4. Milk for 6.	Baked potatoes and butter for 8. Creamed carrots. Bread and butter. Cocoa. Lunches for 2: Ham sandwiches. Bananas.	Soup, boiled meat, potatoes. Bread and butter. Chocolate pudding.
<i>Tuesday.</i>		
Rolled oats for 6. Milk toast for 4. Toast and butter. Coffee for 4 Milk for 6.	Boiled potatoes for 8. Cold boiled meat. Bread and butter. Cocoa. Lunches for 2: Meat sandwiches. Pears, cake.	Boiled potatoes. Cabbage and spare ribs. Bread and butter. Apple dumplings. Tea for 4. Milk for 6.
<i>Wednesday.</i>		
Cream barley. Coffee for 4. Milk for 6. Toast and butter.	Tomato soup. Fried apples. Fried potatoes. Bread and butter. Lunches for 2: Hamburger sandwiches. Apples, cookies.	Steak (round). Fried onions. Cabbage slaw. Mashed potatoes. Bread, butter, jelly. Tea for 4. Milk for 6.

All the mothers took at least 1 quart of fresh milk, and 16 of the 24 families for whom fairly full information about food habits was available bought enough milk to allow at least a pint for each child daily. All of them reported enough meat and other high protein foods, and cereals were used by all. Vegetables and fruits were used

in quantities far above the average found among families living on small incomes. In 21 families they were a part of the daily diet. This result seems to have been accomplished through the encouragement of garden making and canning as well as by instruction in diet. The extent to which the use of coffee by the children had been eliminated was noteworthy; it was given to very few of the children.

Clothing.

The mothers and children seen in their homes were neat in their personal appearance and suitably clothed. A sewing machine was a part of the equipment of each household and was being used in every case. Many of the mothers were very clever at making over old clothing and using remnants to advantage. One was making union suits of flour sacks for her little boy.

Housekeeping and household management.

The management of income was careful and intelligent in all except two families; in these the mothers were mentally subnormal. Vegetables for the winter were stored whenever possible. Tomatoes and other vegetables were canned at home, and sauerkraut, jellies, preserves, and pickles were made. Buying was done in large quantities—flour and sugar were bought by the hundredweight.

Clothing was kept well mended, and the simpler garments at least were made at home. Some of the mothers did quite ambitious tailoring.

Sixteen of the homes were clean and orderly. Housekeeping standards in the others were only fairly good.

Education and recreation.

In all except 3 of the 23 homes visited there was a daily newspaper, and in 9 there was a magazine in addition. Many of the homes contained a number of books, and the public library was used more or less by most of the families, especially where there were older children.

Activities connected with church and Sunday school were a part of the recreational life of practically every family of the group. Fishing, swimming, ball playing, and other outdoor sports were common among the families who lived in the city outskirts. Summer outings had been arranged for many of the boys and girls who had no friends whom they might visit in the country. The mothers in most instances belonged to at least one club, which either carried insurance or was connected with the school.

Insurance and savings.

The mothers carried insurance for themselves and for the children over 16. In Colorado, at that time, younger children could not be insured. Most of the families had small savings accounts—usually less than \$50—which could be used for emergencies.

Work of the mothers.

Fourteen of the 24 mothers were earning money—5 working at home, and 9 outside the home. One of the latter group was a janitress of a school building, 2 others were away from home four days a week, and the others for one or two days. In each case, the arrangement for the care of the children while the mother was away appeared to be satisfactory. In 3 families, older children were responsible for younger ones after school, and in the others a relative or a nursery cared for them.

STATE PROVISIONS AFFECTING LOCAL ADMINISTRATION IN MINNESOTA.

Two Minnesota counties were included in the study—Hennepin, containing Minneapolis, the largest city in the State, and Yellow Medicine, a rural county with a population of only 22 persons per square mile.

PROVISIONS OF THE LAW.

The original Minnesota law providing for county aid to mothers with dependent children was passed in 1913. This act was repealed in 1917, when a new law was enacted. Amendments were passed in 1919 and 1921.¹⁶ Under certain conditions the judge of a juvenile court who finds a child to be dependent may order payment for his support to the mother out of the county funds. The law requires that investigation of all applications for such relief shall be made, and that the families receiving such allowances shall be visited by a representative of the court at least once in three months. In counties of less than 33,000 population—to which type Yellow Medicine County belongs—the probate judge is judge of the juvenile court.

Under this law aid can be granted to a mother (or stepmother) whose husband is dead, imprisoned, in a State asylum, totally incapacitated physically, or who for more than one year has been under indictment for abandoning his children. The mother must have resided in the State for two years and in the county for one; she must be a citizen of the United States or she or her husband must have made declaration of intention to become one. The mother must be of good character, and have a child or children under 16 years of age at home with her, and aid must be essential in order that the child or children may be brought up properly with the mother in her home. A mother is not disqualified for an allowance because of the ownership of a home, which is not disproportionate to the needs of the family, or the possession of personal property not exceeding \$100 in value, exclusive of suitable clothing, household equipment, and such implements and domestic animals as the court feels it advisable for her to retain. In Hennepin County, the amount of equity in a home allowed at the time of the study was \$1,500.

The aid can also be drawn by a grandmother, if the court believes that it is for the best interests of the dependent child to live in her home and if she fulfills the conditions outlined above for the mother.

¹⁶ Laws of Minnesota, 1913, ch. 130; 1917, ch. 233; 1919, chs. 328 and 333; 1921, chs. 435 and 316.

In June, 1921, the law was amended so that the mother may receive a maximum allowance of \$20 for one child and \$15 for each of her other children, instead of \$15 for one child and \$10 for each additional child, as previously provided.¹⁷

COUNTY CHILD-WELFARE BOARDS.

A State act of 1917¹⁸ authorizes the Minnesota State Board of Control to appoint a child-welfare board for any county when requested to do so by its board of county commissioners.¹⁹ The county superintendent of schools and a member of the board of county commissioners serve as members of the child-welfare board by virtue of their offices; three (or five) additional members are to be appointed by the State board of control, at least two of whom must be women. These members serve without pay during the pleasure of the State board.

In counties where there is a county board of child welfare, this board, when so requested by the court, considers applications for allowances to mothers and advises the court in each case as to whether or not the allowance should be granted, the amount needed, and the conditions under which the grant should be made.

STATE SUPERVISION.

In regard to the duties of the State board of control the law states:

It shall be the duty of the State board of control to promote efficiency and uniformity in the administration of this act (concerning mothers' allowances). To that end it shall advise and cooperate with courts and shall supervise and direct county child welfare boards with respect to methods of investigation, oversight and record keeping; shall devise, recommend and distribute blank forms; shall by its agents visit and inspect families to which allowances have been made; shall have access to all records and other data kept by courts and other agencies concerning such allowances; and may require such reports from clerks of the courts, child-welfare boards, probation officers and other official investigators as it shall deem necessary.²⁰

The law also provides for the reimbursement of the county by the State to the extent of one-third of the sum paid out in allowances, provided the expenditure is indorsed by the State board of control, and gives the State board power to refuse this indorsement if the allowances have been improperly made. Since no appropriation for the purpose had been made by the State, at the time of this study the counties were bearing the full expense, and the power of the State board to withhold indorsement was of no effect.²¹

¹⁷ Laws of Minnesota, 1921, ch. 435.

¹⁸ Laws of Minnesota, 1917, ch. 194.

¹⁹ See "County child-welfare boards," pp. 27-31, *County Organization for Child Care and Protection*. U. S. Department of Labor, Children's Bureau Publication No. 107. Washington, 1922.

²⁰ *Compilation of the Laws of Minnesota Relating to Children*, 1921, p. 99 sec. 12.

²¹ See *Proceedings of Conference on Mothers' Pensions*, pp. 23-24. U. S. Department of Labor, Children's Bureau Publication No. 109. Washington, 1922.

Of the 86 counties of the State, 71 had organized child-welfare boards.²² The State board of control worked through these local boards for the welfare of the dependent and delinquent children of the State. It employed in its children's bureau a case supervisor and five field representatives who were trained case workers. The field workers visited each county at least once in two months. In the 30 counties where the judge had requested the help of the county boards of child welfare in the granting of allowances for dependent children, the field representative, on her periodical visits to the county, went over these cases along with the other work of the child-welfare board. Where members of the local board themselves made the investigations the field representative went over the reports with those members. In many instances reports of investigations were sent in to the office of the children's bureau and gone over carefully there.

The State board provided forms for the use of the county boards in keeping case records, and a schedule for estimating household budgets for the families receiving allowances. The forms provided were face cards, blanks for physicians' reports, for school, Sunday-school, and church attendance, and for work records.

²² Information secured by letter from case supervisor of the Children's Bureau, Minnesota State Board of Control, dated June 6, 1922.

HENNEPIN COUNTY, MINN. (MINNEAPOLIS).

Hennepin County had in 1920 a population of 415,419, of which number 380,582 were in Minneapolis and 3,055 in other urban centers, the urban population thus forming 92 per cent and the rural 8 per cent of the total. The foreign-born white inhabitants of the county numbered 94,132, or 23 per cent. Of these, 30 per cent were from Sweden, 18 per cent from Norway, 8 per cent from Canada, 8 per cent from Germany, 7 per cent from Russia, and 5 per cent from Poland, while there were considerable numbers from England, Denmark, Austria, and Czechoslovakia, and smaller numbers from other countries.

ADMINISTRATION.

The advisory committee.

A committee of the county child-welfare board, which met weekly, considered all applications for this form of aid and advised the juvenile court about the proper action to be taken in each case. The secretary of the Child-Welfare Board of Hennepin County was the chairman of this advisory committee, and he was also the executive secretary of the Public-Welfare Department of the City of Minneapolis. This made a very close and desirable connection between the mothers' aid work and the outdoor public relief work of the city. Where it was not possible under the law to grant enough aid to a mother with dependent children for the proper support of her family the case could readily be referred for consideration by the committee to the public-welfare department of the city, which customarily supplemented the income to whatever extent was necessary. The other two members of the advisory committee were trained case workers, who held supervisory positions in the two large private relief organizations of the city. This made still another connecting link in the social-service work of the city, since many of the families aided had been known to one or the other of these two organizations before becoming applicants for public aid. These private organizations supplemented the income in a few exceptional cases, where for some reason sufficient help was not received through the juvenile court and the public-welfare department combined.

Division of work.

A special department for mothers' allowances had been created in the juvenile court. It had a staff of five workers called "investiga-

tors," who were directly under the supervision of the chief probation officer. The county was divided into five districts. Each investigator made the initial investigation and was responsible for the work in her own territory. One who had a good deal of rural territory had the supervision of 35 families, while each of the others supervised from 42 to 46 families. On May 1, 1921, 207 families were receiving aid.

Records.

The records consisted of the application (a blank filled out with information given by the applicant), the correspondence relating to the case, and a history sheet on which was entered, in long-hand, records of visits and interviews. Since the department had merely the part-time services of one stenographer only the correspondence and the summaries for the advisory committee were typed. The records were not adequate, because there was too little time to keep them up to date in this laborious way.

Equipment of the workers.

All the investigators were graduates of either a high school or a normal school. In addition, one had graduated from college, two had done some college work, and a fourth had taken a short course in a school of social work. In the matter of previous experience in social-service work, one had been for two years a visiting house-keeper in a charity-organization society, three had done volunteer work with the American Red Cross and with settlements, and the fifth had for one year been a case correspondent for the American Red Cross.

Procedure in granting aid.

The mother made her application for aid at the juvenile court in the county building, where she was interviewed first by an employee of the court on points which related to her legal eligibility. If he believed her to be eligible, he sent her to the office of the mothers' allowance department, where she was interviewed by the investigator in whose district she lived. The investigator later verified the facts given by the mother as to (1) citizenship; (2) residence; (3) status of father, including his death, incapacity, imprisonment, or indictment for abandonment; (4) marriage; (5) births of children; (6) property interests; and (7) wages of any employed member of the family. The school records of the children were secured, and also full information concerning the state of health of each member of the family. If there were relatives, their financial standing and obligations were looked into.

When the inquiry was finished to the satisfaction of the chief probation officer, the investigator made a summary and an estimate

of the family budget. A typed copy of this material was given to each member of the advisory committee before the day of the weekly meeting at which the case was to be considered. The following summary, showing the form as presented when the application was first acted upon by the advisory committee, and then the forms used when the case was twice brought back for readjudication, will indicate the method used and the advantages of the plan:

INVESTIGATOR'S SUMMARY.

AUGUST 25, 1921.

No. ———.	Minneapolis, Minn.	August 4.	
Name of applicant: ———.	Birthplace: ———,	Norway.	
Age: 32 years.	In State: 6 years.	In United States 13 years.	
Residence in county: 4 years.	Tax: None.	Mortgage.	
Property: None. Valuation: ———.	Citizenship: Yes;	husband took last paper January 27, 1920.	
Marriage: December 3, 1909.	Rooms: 12.	Rent: \$50.	
Address: ———.			
Name of husband: ———.			
Names and ages of children under 16:			
Thomas. November 6, 1915, Racine, Wis.			
Jennie. September 26, 1917, Racine, Wis.			
Fannie. April 30, 1920, Minneapolis, Minn.			
Names and ages of children over 16:			
None.			
Employment and possible income of family: Woman can do day's work.			
Insurance received or prospective: None.			
Had \$1,000 Court of Honor insurance; lapsed two years ago.			
Budget of family expenses.....	\$102.94	Income from rooms.....	\$40.00
Rent.....	50.00	Deficit.....	62.94
Food.....	28.59		
Clothing.....	10.60		
Fuel.....	8.50		
Miscellaneous.....	5.25		

List of relatives:

——— brother of No. 1. Day laborer, Racine, Wis.

——— sister of No. 1. Racine, Wis., says she can not help.

Remarks and recommendations.—Mr. ——— died at General Hospital, July 25, 1921, of diabetes. Had been ill about two months. The family is living in 12-room house, paying a rental of \$50. Mrs. ——— rents out some rooms, earning about \$40 a month from roomers. She does not own the furniture, but was buying it from a former landlady on a partial-payment basis. Now plans to give up this large house, returning furniture and keeping only sufficient to furnish a few rooms. It is recommended that maximum county aid be granted, the mother to earn the deficit. One day a week outside work should take care of the deficit.

Decision.—Grant of \$50 a month recommended. To be reconsidered when family moves.

Readjudication.

NOVEMBER 10, 1921.

No. _____		
Name: _____		
Address: _____		
Budget	\$67.94	<i>Remarks.</i> —Mrs. _____ has moved, given up roomers, and expects to be confined some time in February. She is now doing one washing a week, and earns about \$9 per month. She will need more help later. Case is brought back for plan to make up the deficit in the budget.
Rent.....	15.00	
Food.....	28.59	
Clothes.....	10.60	
Fuel	8.50	
Miscellaneous.....	5.25	

Decision.—Referred to board of public welfare for aid to make up deficit in budget.

Readjudication.

FEBRUARY 23, 1922.

No. _____		Budget.....	\$77.00
Name: _____		Rent.....	15.00
Address: _____		Food.....	33.90
Children:		Clothes.....	13.60
Thomas, November 6, 1915.		Fuel	8.50
Jennie, September 26, 1917.		Miscellaneous.....	6.00
Fannie, April 30, 1920.			
Stanley, January 30, 1922.			

Remarks.—Stanley was born January 30, 1922, at General Hospital. Maximum allowance is recommended. Board of public welfare is supplementing \$10 per month.

Decision.—\$65. Deficit referred to board of public welfare.

The judge held a private hearing each week for the mothers' allowance cases. The mother was notified and might, if she chose, be present. Ordinarily she did not come, as the court hearing was perfunctory in cases where the investigator, the chief probation officer, and the committee were agreed as to the action that should be taken. If a legal point was involved, the judge tried the case and a lawyer might appear on either or both sides. If the mother was dissatisfied with the action recommended by the committee, she could protest. This occasionally happened. In a court session attended by the writer one mother protested against the discontinuance of her allowance. The judge went over with her carefully the estimated budget and the income. She acknowledged that the income was correct, and he explained that it covered their estimate of her necessary expenditures and that the allowance could not be continued.

THE FAMILIES AIDED.**Children benefiting by grants.**

In May, 1921, 207 families were receiving allowances for 655 dependent children, there being a total of 708 children in the homes. Two, three, and four children in a family were most frequent, and the largest number of children in any family was eight. The size of the families was reported as follows:

Number of children aided in family.	Number of families.
Total.....	207
One.....	16
Two.....	55
Three.....	62
Four.....	45
Five.....	17
Six.....	8
Seven.....	3
Eight.....	1

The ages of the children receiving aid were as follows:

Age.	Number of children.
Total.....	654
Under 4 years.....	101
4-5 years.....	104
6-7 years.....	103
8-9 years.....	110
10-11 years.....	94
12-13 years.....	96
14-15 years.....	43
Not reported.....	3

Causes of dependency.

Allowances had been granted to 123 families because of the death of the father, to 67 because the father was incapacitated, to 11 because he had deserted, and to 6 because he was in prison.

Residence and nativity of the mothers.

Six of the 207 families receiving aid lived in Hennepin County outside the city of Minneapolis; the others all resided within the city.

Slightly over one-half (108) of the mothers were foreign born, and 96 were native born; the nativity for 3 mothers was not reported. Of the foreign born, 29 were from Sweden, 20 from Norway, 16 from Poland, 13 from Russia, 5 each from Finland, Rumania, and Austria, 3 each from Hungary, Germany, and Italy, 2 each from Denmark and Canada, 1 each from England and Switzerland.

ASSISTANCE GIVEN.

Allowances.

The allowance was paid in monthly installments at the county building. In May, 1921, 207 families were receiving allowances, as follows:

Monthly allowance.	Number of families.
Total.....	207
Less than \$15.....	12
\$15-\$19.....	18
\$20-\$24.....	11
\$25-\$29.....	41
\$30-\$34.....	8
\$35-\$39.....	58

Monthly allowance.	Number of families.
\$40-\$44.....	7
\$45-\$49.....	22
\$50-\$54.....	6
\$55-\$59.....	13
\$60-\$64.....	3
\$65-\$69.....	7
\$75-\$79.....	1
\$80-\$84.....	1
\$85-\$89.....	1
\$90-\$94.....	4
\$95-\$99.....	1

Service to the families receiving aid.

Visits to the families at least once in three months were required by law. The mothers' allowance department had adopted the rule of visiting them at least once in two months, and oftener when more attention was needed. The relationship between the mother of the family and the visitor appeared to be friendly. The visits recorded during the six months' period preceding May 1, 1921, for the 167 families who had received aid during the full period were as follows:

Home visits made.	Number of families.
Total.....	167
Less than three.....	21
Three.....	55
Four.....	38
Five.....	29
Six.....	13
More than six.....	9
Number not reported.....	2

The visitors also planned to be in the office on the day appointed for their mothers to come for the allowances, so that they might, if desired, be interviewed at that time.

The allowance was reconsidered for revision at least once a year, and oftener if the circumstances had changed.

The health of the mother and the children received a great deal of attention. Children under two years were placed under the supervision of the Infant-Welfare Society, which gave instruction in feeding and care. When remediable defects were suspected, plans were at once made for examination and treatment. Minneapolis had excellent clinics where free treatment could be secured.

The mothers were asked to keep expense accounts and were required to present a summary of the past month's expenses and income when they came for their allowances. These accounts were made the basis of conferences on the management of income. The visitors gave some instruction in diet and referred the mothers for further instruction to feeding clinics and nutrition classes.

When necessary, where the standards were low, the visitors helped the mothers to formulate plans for housekeeping. For one household that had been very disorderly the visitor had made out a program of duties for each child, which was kept on the kitchen wall, and she had also succeeded in bringing about a regular mealtime in a home where the eating had always been haphazard.

The visitors sometimes secured scholarships to keep children in school after they had reached legal working age. An earnest effort was made to have the foreign-speaking mothers learn English, and the facilities for home teaching offered by the board of education were used for the purpose.

STANDARDS OF LIVING.²³

Characteristics of the families visited.

Out of the 207 families receiving aid May 1, 1921, visits were made to 24 families. They were chosen from the list of those who had been receiving aid for the longest periods.²⁴

Period of aid (years).	Number of families.
Total.....	24
Seven.....	4
Six.....	2
Five.....	2
Four.....	4
Three.....	6
Two.....	3
One.....	1

In 11 families, there were children too young to go to school. In 5 families, older children were working and contributing to the support of the family.

In 1 family there was but one child, in another there were eight; in each of 9 families there were three children, 5 families had two, another 3 had four, while there were 2 families each with five children and 3 families with six.

All the mothers visited spoke English well enough to carry on an ordinary conversation about household affairs. As to nativity, seven were born in the United States, six in Sweden, three in Austria, two in Poland, and two in Norway, while Denmark, Russia, Italy, and Hungary were each represented by one mother.

Housing.

Twelve of the 24 homes were cottages of four or five rooms, with good yards and garden space. One was old and out of repair; the others were in good condition. Six were owned by the families, who seemed to take great pride in keeping the property in good condition. The other 12 families were living in flats; all except 3 of these were

²³ Data were secured through home visits made by the writer.

²⁴ For general method of selection of families see p. 1.

light, well ventilated, in good residence neighborhoods, and had suitable play space for the children. All the homes had running water and inside toilets, but no bathrooms. Two flats were overcrowded and were in undesirable neighborhoods; one family lived in a basement slightly below street level.

Household equipment.

In 18 of the 24 homes there was a pleasingly furnished sitting room, with provision for heating it in winter; enough beds, with sufficient linen and coverings so that not more than two persons need occupy one and allowing for proper separation of the sexes; and the necessary equipment for a family meal and the care and preparation of food, for sewing, and for cleaning and laundry work.

In six families there was overcrowding in the sleeping arrangements—three children in one bed or two children sleeping with the mother. In two of these instances there were not enough bed linen and coverings.

Three of the homes had electric lights; the others had gas for lighting and for summer cooking. One mother who had been receiving an allowance for seven years, and who supplemented it by doing home laundry, had installed electric lights in her house during that period, and had bought an electric iron.

Food.

The selection of food showed that the mothers had received considerable instruction in diet. Many of the families were under the care of some health agency—such as the University of Minnesota dispensary—and received instruction from this source as well as through the visitor from the juvenile court. Moreover, many of them had previously been dependent on one of the two private relief organizations, which included health instruction in their case work.

The amount of milk consumed indicated that very careful work had been done in teaching its importance in the diet of children. Twenty of the 24 families interviewed were using at least one pint daily for each child and one-half pint for each adult. Meat was served in some of the families every day, and in others only once a week; but in all cases but one there appeared to be no question that the protein in the diet was sufficiently high. In two families the use of meat was somewhat excessive and might well have been partly replaced by milk and vegetables.

The use of vegetables and fruit appeared to be adequate in 17 families; that is, there were potatoes with an additional vegetable and some fruit in the daily menu. In the 7 families where these foods were not used in sufficient quantities, some of the mothers said that the children would not eat vegetables, and the others that the money to buy them was lacking.

For one family the food was felt to be inadequate; that is, the amounts of milk, vegetables, fruit, and possibly of high-protein foods were insufficient.

Clothing.

In 22 of the 24 families the clothing appeared to be adequate; in 2 families it was noticeably poor in appearance and insufficient for proper protection in cold weather. The children were not seen in all instances, but the mother told of the contents of their wardrobe and usually showed some of the garments. All the mothers did plain home sewing, and some did skillful work in home dressmaking.

Education and recreation.

All the children of compulsory school age were in either public or parochial schools. Three children of over 14 years were in high school on private scholarships which the case visitors had arranged for them.

One family took neither a newspaper nor a magazine; the other families had either a daily or a weekly paper, and eight had in addition a magazine or a church paper. The public library was used for additional reading material by a number of the families. Of the 15 mothers born in non-English-speaking countries, all had learned some English and 4 were continuing their study of it.

For the children in most of these homes there was play space where ball playing, roller skating, and coasting were possible. The boys of three families belonged to the Boy Scouts. Some of the mothers belonged to a settlement class. Most of the families went occasionally to picture shows. The social activities connected with church, Sunday school, and school took a large place in their lives.

Examples of families aided.

The stories which follow give pictures of homes which were typical of those visited:

Mrs. L, a Swedish woman, had been receiving aid for six years. She and her three children had four rooms in a pleasant corner house, which sheltered also three other families. The neighborhood was one of comfortable, plain houses. There was a large back yard which had never been used for a garden, and since the house stood on the corner lot there was an air of outdoor roominess about it.

Inside, the exquisitely clean kitchen was well equipped with the necessary cooking utensils and dishes, a dining table, a refrigerator, a washing machine, and a good kitchen range. The sitting room had a nice carpet, comfortable chairs, a table, and a pianola.

There was a bed in each of the two bedrooms, each with a good mattress and sufficient linen and coverings. Mrs. L and her 9-year-

old boy occupied one of these beds; the two girls had the other. She was trying to plan for the boy a day bed in the sitting room.

The food was good. Two quarts of milk were taken daily, usually 1 pound of meat, a fresh vegetable besides potatoes (ordinarily carrots, spinach, beets, or onions), and tomatoes, rhubarb, or some kind of fruit, such as oranges or prunes. The breakfast consisted of cooked cereal and milk. Besides the advice Mrs. L had received from the visitor she had had excellent instruction in diet from the university dispensary, where she was taking treatment; formerly she had also had instruction from a visiting housekeeper of the associated charities.

The clothing was very neat and clean. The mother said she was careful to see that the children had good shoes in bad weather, and that their feet were kept dry.

The family took a daily paper and a magazine. The whole family went to a picture show about twice a month. The children went regularly to Sunday school, and had a good deal of recreation in connection with their school.

Mrs. L, who had apparently been accustomed to a good and wholesome standard of living, seemed able with her allowance to get all that she needed, except that she could not replace household furnishings as they gave out. Her sheets were nearly worn out, and she had only just enough dishes left to set the table. The estimated budget for the family was \$77. She received an allowance of \$65, and had earned during the previous six months an average of \$16.60 a month.

Mrs. E had been receiving aid for two and one-half years. Her husband had built the three-room cottage in the outskirts of the city, which she was occupying with her two little boys. Everything about the house was very clean and orderly. There were well-furnished beds, and the kitchen contained all the necessary equipment for cooking and serving food, and for cleaning and laundry work.

The children were neatly dressed. On the occasion of the visit Mrs. E was busy mending woolen underwear, which was to serve for a second season.

The food was excellently chosen. The physician had recommended for the mother a special diet in which milk and fresh vegetables were prominent. Three quarts of milk and fresh vegetables were taken each day, with apples in the winter, and either oranges or dried fruit when apples were out of season. The family seldom had meat, not even once a week, but eggs were used frequently.

The estimated budget was \$50.41 and the aid received was \$35. The mother earned the additional \$16 by doing laundry work at home. She said that she had bought no new household furnishings or equipment, but that the original supply was sufficient for the *present*.

YELLOW MEDICINE COUNTY, MINN.

Yellow Medicine County, in the west-central part of Minnesota, is the one distinctly rural community included in the study. It is a county of large farms, devoted for the most part to grain raising. In 1920 the three largest towns were Canby with a population of 1,754, Granite Falls with 1,251, and Clarkfield with 724. A few other villages had two to three hundred people each. The total population of the county in 1920 was 16,550, of whom 2,808, or 17 per cent, were foreign-born whites; of these over half were from Norway, nearly one-fifth from Germany, nearly one-seventh from Sweden; smaller numbers had come from Denmark, Poland, and many other countries.

ADMINISTRATION.

As Yellow Medicine was a county of less than 33,000 inhabitants the probate judge was judge of the juvenile court and had power to grant allowances under the State law.²⁵

At the request of the county board of commissioners, the State board of control had appointed a child-welfare board for the county. Since no funds had been appropriated for an executive secretary to this board the local chapter of the American Red Cross gave the services of its executive secretary to the board, and she acted also as a volunteer probation officer of the juvenile court. She investigated applications for mothers' allowances and visited the families while they were receiving aid. She was the one trained social case worker in the county.

Supervision by the State board of control.

The field representative of the children's bureau of the State board of control visited the county about once in two months and, along with her other work for dependent, delinquent, and illegitimate children, advised with the local workers in regard to families receiving mothers' allowances. She had visited some of the families with the secretary of the county child-welfare board. Especially in one instance where there were problems of delinquency she had gone carefully into them and given advice about procedure.

Household budgets were estimated with the aid of the schedule furnished by the State board. Case records were kept, in the form advised, on the face card and blanks for reports from schools, employers, and physicians, which were supplied by the State board.

²⁵ See p. 55.

Procedure in granting aid.

The application for mothers' aid might be made to the judge of the juvenile court, to any member of the child-welfare board, or to the executive secretary, who had an office in the county courthouse. The secretary made an investigation of each application, verifying the marriage, the birth dates of the children, the death or incapacity of the husband, and the citizenship and residence requirements. She carefully checked up the property interests of everyone responsible for the support of the family, consulting tax lists and the records of the assessor's office. The results of this investigation were usually presented to the child-welfare board at its regular monthly meeting; but if the meeting was a long way off and the applicant was in need, the judge granted aid after consulting informally with one or more members of the board. The whole process in this county was naturally much less formal than in more thickly populated places. The juvenile-court judge knew more or less intimately most of the older residents of the county, and he had easy access to information that would be hard to secure in cities.

A budget was estimated for each family, using the schedule furnished by the State board. The amount granted was the difference between the budget and the income the family had through earnings, gifts from relatives, and other sources, provided that this was not beyond the maximum allowed by law. The mother appeared before the judge when the grant was made.

The allowance money was paid from the county treasury, and there was no lack of funds to meet the grants ordered by the court.

THE FAMILIES AIDED.

On May 1, 1921, nine families were receiving allowances. The fathers of all these families were dead.

In seven instances a separate home was being maintained, in one case by the grandparents who were caring for the children. One family was living in the home of grandparents, and one mother was with her child in a home in which she was working as housekeeper.

Two families had received aid for one year but less than two. Five had received aid for two years, one for three years, and the ninth for eight years.

ASSISTANCE GIVEN.**Allowances.**

The aid granted ranged from \$8 to \$32 a month, as follows: Three families received grants of \$15, two had grants of \$32, and four had grants of \$30, \$24, \$18, and \$8, respectively. There were in all 18 dependent children, receiving a total of \$189 per month—an average of \$10.50 per child.

All the families had other sources of income. In six families the mother was working, and in one of these older children also were earning money; in two families older children were at work; and one family of children was cared for by grandparents, the grandfather working. One family was living with the grandparents, who supplied part of the support. Of the six mothers who were working, one earned board for herself and child and \$5 a month; two earned \$30 a month, one earned \$35, and two earned \$40. One mother received poor relief in addition to the aid given through the court.

In cases where it was possible to calculate the income with fair accuracy the amount of the allowance made the income come to at least within a dollar of the estimated budget. In several cases the income, including gifts of indefinite value, was too irregular for the deficit to be calculated with accuracy.

Service to the families receiving aid.

Both the judge and the executive secretary of the county child-welfare board were much interested in the welfare of the families receiving aid. The judge kept the situation of each family in mind and was particularly interested in the children. His files contained lengthy correspondence with the State's attorney general on points of law involving decisions on the legality of plans which seemed to him important to the welfare of the families—as in the case of one mother who could have rented a more suitable house just beyond the county boundary than within it. In one instance where the grandparents were caring for three children, he held the hearing in their own home, as it would have been difficult to arrange to transport them to the county seat.

The executive secretary visited the homes at least once in three months. Four families had been visited twice during the past six months; one, three times; one, four times; and two, six times. In addition to seeing the mothers in their homes, she had frequent incidental contacts with them. She sent the school blanks furnished by the State board to the teachers and received intelligent cooperation from them in keeping the school work of the children at its best.

Children were permitted to go to school after they were eligible for work if they could support themselves while doing so—they were not expected to make a contribution to the support of the family. One boy was just finishing high school. Training to become nurses had been made possible for several girls.

The full-time work of three of the mothers took them away from home each day. In one family an aunt cared for the children during the mother's absence, and in the other two families the younger children were left with a 15-year-old girl. This arrangement seemed satisfactory in one case, but in the other case it was to be changed.

Health was looked after as carefully as the facilities permitted. The public-health nurse employed by the county had resigned in 1919, and at the time no one could be found to take her place. Later the county board decided to economize and not to employ one. There was a county physician whose services were available only to the families receiving poor relief. A tuberculosis sanitarium belonging to Yellow Medicine in partnership with three adjoining counties held free clinics weekly at the sanitarium and, on request, would arrange one at any point in the four counties. A mental examination could be made locally only in cases of insanity, but the State board of control could send an examiner whenever there was an applicant for one of the State institutions for the feeble-minded.

STANDARDS OF LIVING.²⁶

Visits were made to five of the seven separate homes that were being maintained by the aid of the allowances.²⁷ The information obtained in these interviews in regard to food and household equipment was less full than that secured from the women living in cities. The mothers were much more reticent, being entirely unaccustomed to talking about personal affairs with a stranger. None of them kept household accounts.

Housing.

Three of the five families lived in neat and well-kept cottages, with good yards and space for gardens. The surroundings were wholesome, and there was no lack of play space for the children. One family lived in a second-story flat that was roomy and well ventilated. One lived in an old store building that had been converted into a dwelling; it contained one poorly lighted room which was not, however, used for sleeping. The two last places were in the more closely built-up parts of the towns where they were located, and there was little ground space around them, although there was no lack of open space near by where the children could play and not be beyond the possibility of supervision by their mothers.

Household equipment.

Each house had a sitting room that was kept for the social life of the family, comfortably furnished with a good floor covering, chairs, a table, and in some instances with additional pieces of furniture. The sleeping arrangements appeared to be adequate, and each house had the equipment necessary for the care, preparation, and serving of food, for cleaning, and for laundry work.

²⁶ Data were secured through home visits made by the writer.

²⁷ For general method of selection of families, see p. 1.

Food.

In two families the food appeared to be well chosen and to include milk for the children, with cereals, vegetables, fruit, and a sufficient, though not excessive, quantity of meat and other high protein foods. The three other families seemed to be following the poor food habits so prevalent in rural communities—excess of meat, lack of fresh foods except during the summer, dependence upon canned vegetables and fruits, and little use of milk. The menus of these families resembled those of the public eating houses in the locality, and consisted of bread, meat, potatoes, cakes and pies, coffee with canned milk, with the occasional addition of a vegetable or fruit.

Clothing.

The standard of clothing was unusually good. The children seen were neatly and tastefully dressed, their clothing being similar to that of the other children with whom they associated.

Education and recreation.

The judge took a great interest in the prospects of the older children and in their training for work. It had been the policy of the court to require a child of 14 who had not completed the eighth grade to work during vacation time for his own support. Aid was discontinued during vacation time and given again when school opened. If a child who could qualify for a working certificate remained in school he had to earn enough for his own support, and he was helped to secure employment that made this possible. He was expected to work during the days when school was not in session and sometimes after school hours. One child was to graduate from high school at the end of the school year and one was in training as a nurse. All the children of compulsory school age were in school, and their progress was being watched.

There was some sort of periodical—usually a weekly newspaper—in four of the five homes visited. In two instances the family had a magazine as well.

The families seemed to have access to all the recreation afforded by the community. There was a motion-picture house in each of the larger towns, and all went to the "movies" occasionally. The children of one family were found to be going every day on a free pass, and the mother was asked by the executive secretary to limit them to weekly visits. All the children had plenty of outdoor play, including fishing and swimming for the boys. The recreation of the mothers was the same as that of the other women of the town—church clubs, lodge meetings, visiting friends.

ST. LOUIS.

The population of St. Louis in 1920 was 772,897. Its total foreign-born white population was 103,239, or 13 per cent of the whole. Of these, 29 per cent were from Germany, 13 per cent from Russia, 9 per cent from Ireland, 9 per cent from Italy, 6 per cent from Hungary, 5 per cent from Austria, and 5 per cent from Poland; the remaining 24 per cent came from England, Czechoslovakia, and several other countries. Of the native-born population, 10 per cent were negroes.

ADMINISTRATION.

The Board of Children's Guardians of St. Louis had been paying board for children to their own mothers since 1912. This was made possible under a State enabling act²⁸ through an ordinance passed by the city council during that year. This ordinance established a board of children's guardians, having charge of all children dependent upon the public for support. The board therefore had supervision of the city institution for delinquent children and also had power to order, through the city comptroller, payment of board for dependent children either in foster homes or with their own mothers.

The board of children's guardians.

At the time of the study the board of children's guardians was composed of seven members appointed by the mayor who served without pay.²⁹ The members were all business or professional men who had been on the board for several years and were deeply interested in the work. Several had given liberally of their time to the administration of the placing-out department, which paid board for children to their mothers, had visited the homes of many of the families, and had made suggestions for improving the standard of living. The board was divided into two committees of three members each—one on institutions and one on placing out; the chairman being a member of both committees. Monthly meetings were held.

Dependent children, whether in their own or in foster homes, were under the charge of the placing-out department. Its work was organized on the assumption that all dependent or neglected children physically and mentally fit for home life should have a home. The child's own home was utilized when it could be made a proper one, otherwise a foster home was provided. Mothers who were receiving payments

²⁸ Laws of Missouri, 1911, p. 349.

²⁹ In September, 1921, the membership was increased to 12 persons, of whom 5 must be women.

for the care of their own children were sometimes given foster children to board, and thus were supplied with desirable home work. The ordinance establishing the board provided for the placing-out department three classes of paid service—an agent, investigators, and clerical workers. All of these were appointed through competitive examinations. In August, 1921, there were 7 investigators and 2 clerical workers, forming with the agent who directed the work a force of 10 employees. Each investigator was assigned by the agent to work for which her experience and training had best fitted her. One was assistant to the agent, one had been assigned to supervision of older girls, another supervised older boys, and a fourth had charge of children under 5 years of age; two workers supervised homes, and the seventh had charge of investigations. Of the two supervisors of homes, one had only the homes with mothers who were receiving board for their own children; the other had foster homes as well. The worker assigned to investigations inquired into the applications of all mothers for board for their own children.

According to the monthly reports of June, 1921, one worker supervised 51 homes of mothers receiving board for their own children, another supervised 20 such homes and 36 foster homes, and a third worker conducted all initial investigations besides supervising 29 homes.

Records.

As there were but two clerical workers on the force of the placing-out department—the secretary to the agent and the bookkeeper—the records were kept by the field workers without stenographic assistance, and they did not do justice to the amount of service given or to the extent of the workers' acquaintance with the families. They contained only slight accounts of the history and condition of the families and of the work done on their behalf. The case record consisted of a face card; a second sheet, on which appeared the estimated budget; the income and work record, with space for the action of the board at different dates; a history sheet, on which additional material and records of visits and interviews were kept; and the correspondence relating to the case.

Equipment of the workers.

The agent who directed the work of the placing-out department had been with the board for a number of years. She had taken some training courses in social service and was a member of the State bar. Of the three investigators who worked with families of mothers receiving aid, one was a college graduate, another a graduate of a school of social service, and the third had had a business education. One had been with the board for eight years, one for two years, and the third for only a month.

Children eligible for aid, and amount of grant.

A mother who was a widow, or whose husband was an inmate of a State sanitarium for the tuberculous or the insane or confined in a penal institution might receive board for her own children under 14 years of age if such arrangement was necessary to enable her to maintain her home, provided she had been for two years a resident of the city of St. Louis and was of good character and of satisfactory mental and physical ability.

The board of children's guardians had full power to decide on the amount to be paid, the maximum, except in special cases, being \$15 per month. For grants higher than \$15 the consent of the city comptroller had to be obtained. The money for the support of the work of the board was appropriated by the city council on an estimate submitted by the board. For the year 1921 the appropriation was \$99,900; of this sum \$76,000 was to be spent for direct aid to dependent children with no indication of the specific amounts for those in their own and those in foster homes. The board of guardians had economized by securing free foster homes in many instances, and it had always been able to give aid to all mothers with dependent children who it believed should receive allowances.

Procedure in granting aid.

The application was usually made at the office of the board by the mother, who filled out a blank giving information as to dates of births, school progress, and work of the children; date and cause of death or disability of the father, his previous employment and his insurance, if any; and the names, addresses, and economic status of relatives. She gave also her church affiliation and the names of references. She was not required to make an affidavit. If the family was referred by an outside agency and the mother was unable to come to the office the application could be made out at her home.

The investigation which followed included a visit to the home, consultation with the references, relatives, physician, pastor, and any social agency which had known the family. After the report of the investigation had been submitted to the agent and found satisfactory, the mother was cited to appear before the placing-out committee of the board. On this occasion the committee members talked over with her the important points in her situation, her resources, and the work by which she planned to add to the income. They had before them the report of the investigation and an estimated budget for the family.

The money was paid semimonthly in cash to the mother by the city treasurer in the city hall, upon presentation of an identification card received at the offices of the board.

THE FAMILIES AIDED.

Children boarded in their own homes.

In June, 1921, 94 mothers were receiving board for 313 children, 24 of whom were 14 years of age or over. In 87 of these families the father was dead, and in 6 his insanity was the cause of the dependency, and in one family the father was incapacitated. As is shown by the following list the largest number of families had 3 children, and the next largest group were families with 2 children.

Number of children aided in family.	Number of families.
Total.....	94
One.....	4
Two.....	21
Three.....	35
Four.....	16
Five.....	11
Six.....	6
Seven.....	1

The ages of the children who were being boarded with their own mothers were as follows:

Ages.	Number of children.
Total.....	313
Under 4 years.....	40
4-5 years.....	39
6-7 years.....	55
8-9 years.....	45
10-11 years.....	57
12-13 years.....	53
14-15 years.....	22
16-17 years.....	2

Nativity of the mothers.

Of the 94 mothers 38 were known to have been born in foreign countries—8 in Italy; 7 in Russia; 4 each in Austria, Germany, and Poland; 3 each in Hungary and Ireland; and 1 each in Czechoslovakia, Yugoslavia, Norway, Rumania, and Sweden. Of the 55 native-born mothers, 1 was a negress. The nativity of 1 mother was not reported.

ASSISTANCE GIVEN.

Amount of board paid.

The total pay roll for the month of June, 1921, was \$3,850, an average of \$12.30 per child. The following list shows the amount of the board paid to each family:

Amount of board per month.	Number of families.
Total.....	94
Less than \$15.....	3
\$15-\$19.....	1
\$20-\$24.....	8
\$25-\$29.....	4
\$30-\$34.....	22
\$35-\$39.....	2
\$40-\$44.....	7
\$45-\$49.....	19
\$50-\$54.....	11
\$55-\$59.....	3
\$60-\$64.....	7
\$65-\$69.....	1
\$70-\$74.....	3
\$75-\$79.....	2
\$80-\$84.....	1

Service to the families receiving aid.

The department believed it advisable that a visit should be made to each mother in her own home once a month. During the six months ending July 1, home visits to 75 families who had been receiving board for six months or longer, were recorded as follows:

Home visits made.	Number of families.
Total.....	75
Two.....	³⁰ 6
Three.....	24
Four.....	19
Five.....	8
Six.....	18

In addition to seeing the mother in her own home the visitor could count on seeing her when she came to the office twice each month to collect her allowance. The agent also frequently had an interview with her at this time and thus came to know each of the mothers.

An expense account covering all expenditures for the preceding month was presented by each mother on one of her semimonthly calls at the office. The case worker went over this carefully with her at that time, checked the accuracy of the figures, and gave advice about management of income. The accounts were kept in small blank books and with an astonishing degree of accuracy and faithfulness by a large percentage of the families. They were kept by the children when the mother could not write English. A summary sheet was made by the family when the month's accounts were complete, and this, as well as the expense account book, was presented at the conference.

³⁰ The mothers in the families visited only twice were employed all day away from home. The children were seen at school.

The health of both the mother and the children received careful attention. A physician from the board of education spent an hour once a week at the office of the board of children's guardians, and all the children for whom the mothers had applied for board were sent to him for examination. He gave instructions as to the treatment they required and directions about returning for further attention. A medical record card for each child was filed at the office of the board. If the mother needed medical examination or treatment it was secured for her from a free clinic or from her family physician.

School records were carefully observed and close touch with the teachers was maintained by means of visits to the schools. The board took a liberal attitude about keeping the children in school until they had finished the eighth grade, and it was customary to do this. Scholarships to enable exceptional children to go beyond the eighth grade were desired greatly by the workers and in some cases they were secured. Three children had been in school on scholarships during the previous school year.

Work of the mothers and children.

Care was taken to see that the children, when first employed, were placed in suitable positions; in a number of instances work had been secured for them by the visitors.

The mother, in each case, was expected to earn as much toward the support of the family as she could without injury to herself or neglect of the children. The work she was encouraged to do was selected according to her capabilities, but a few general rules were followed. No night work was permitted and no men roomers or boarders were allowed. Of the 94 mothers 54 were working—22 at home, 23 away from home, and 9 both at home and away from home. In 12 of the families the board of children's guardians had placed children for foster care and had thus helped to provide some income. The occupations of the 54 mothers are shown below:

Total number of mothers working.....	54
Working at home.....	22
Boarding wards of board of children's guardians ³¹	12
Sewing ³²	7
Laundry work.....	2
Making paper novelties.....	1
Working away from home.....	23
Full time.....	11
Day's work.....	5
Factory work.....	3
Laundry work.....	1
Saleswoman.....	1
Sewing (alterations).....	1

³¹ One mother sewed also and one did laundry work.

³² Two mothers also did laundry work at home; one mother sewed at home for a shirt factory.

Working away from home—Continued.

Part time.....	8
Day's work.....	3
Factory work.....	2
Charwoman.....	1
Saleswoman.....	1
Not reported.....	1
Time not reported.....	4
Day's work.....	3
Laundry work.....	1
Working both at home and away from home.....	9
Day's work and boarding wards of board of children's guardians.....	3
Laundry work at home and away from home.....	2
Baking in private family and at home.....	1
Day's work and laundry work at home.....	1
Laundry work away from home, and boarding wards of board of children's guardians.....	1
Laundry work away from home and janitress work.....	1

Of the mothers working part time away from home, seven were working six days and the others four or five days a week, at work which could be done while the children were at school. The children of the women who were working full time were all over 10 years of age, except a 7-year-old boy, who was left in the care of a child of 14 years, and two children in one family, aged 3 and 5 years, who, with one of 12 years, were cared for by a neighbor.

STANDARDS OF LIVING.³³**Characteristics of the families visited.**

Visits were made to 26 of the 94 families, the list being chosen from those who had been receiving aid during the longest periods.³⁴ One family had been receiving aid for something over seven years, 3 families for six years, 2 for five, 10 for four, 8 for three, and 1 for two years, and 1 family for 18 months.

In 8 of the 26 families there were children too young to go to school; in 12 families older children worked to help support the family. In 1 family with eight children, six were being aided and the two eldest were working. In each of 3 families five children were aided, being in each case all of those at home. Four children were receiving aid in each of 6 families, there being one or two other children in the home in three cases, one child being in high school on a private scholarship, while the other children were working. In each of 12 families three children were receiving aid; there were one or two other children in the home in half the cases, and all but two of these were known to be working. In 4 families the number of children receiving aid was two; in 2 of these cases there was in the family another child who was working.

³³ Data were secured through actual home visits by the writer.

³⁴ For general method of selection of families, see p. 1.

Nativity of the mothers.

Fifteen of the mothers visited were of native birth, 3 were born in Poland, 2 in Austria, 2 in Hungary, 2 in Russia, 1 in Ireland, and 1 in Norway.

Housing.

In finding housing for these families the board of children's guardians was hampered by the fact that it was necessary for them to live within the city limits of St. Louis, where there were no inexpensive suburban residence districts. A majority of the families were, therefore, living in the most congested parts of the city. Only one of the families visited was in a cottage with a small front yard and a little space in the rear which might be used for a garden. The other families were living in flat buildings of two and three stories, each building housing from four to six families. Twenty of the families were in three-room flats, the number of occupants ranging from three persons (1 case) to nine persons (1 case); in 8 cases there were six persons; in 4 cases, five; in 5 cases, four; and in 1 case there were seven persons living in the three rooms. Four families of from four to six persons were living in flats of two rooms, while 1 family of five persons had a four-room flat. Five of the three-room flats were arranged one room behind the other, with no window in the middle room. Two flats had bathrooms, and another had an inside toilet; in the remaining instances the families used outdoor toilets. Connected with most of the buildings was a small, paved back yard in which the children could play. In a few instances a porch or an attic afforded additional play space.

Household equipment.

Fourteen of the 26 families were provided with sitting-room furniture—a floor covering, good chairs, a table or bookcase, and a day bed for sleeping. Because of the crowded housing there was in no case a sitting room not used for sleeping. The crowded housing also made it impossible to contrive good sleeping arrangements for more than half the families. Ten families had a bed for each two persons, adequately fitted up, and so arranged that the boys and girls of the family need not occupy the same room. In the other 16 homes this standard was not reached.

The equipment for household work was, on the whole, satisfactory. All had either gas or coal-oil stoves for summer cooking, and all had either a refrigerator or an ice box and were supplied with free ice through an arrangement made by the board of children's guardians. These two items were very important in alleviating the discomforts of the long, hot summer in crowded quarters. Electricity was found in only one of the homes. All but four of the families had a heating stove and all had a kitchen range. All but one had a good sewing

machine. There were sufficient cooking utensils for the preparation of simple meals and dishes enough to make a family meal possible. All had equipment for laundry work and cleaning.

Food.

The amount of milk used was generally far below the standard of 1 pint for each child and a half pint for each adult. Four families only were receiving this amount. Six families were buying no fresh milk and were using either canned or dried milk in its place. The other 16 families had each 1 quart or more, but less than enough to provide each child with a pint a day. Meat or a meat substitute was used from three to six times a week. The custom with respect to the use of vegetables was fairly good. All the families were using fresh vegetables, but only 11 were making them a part of the daily dietary. Inasmuch as the study was made at a time when fruit was extremely scarce and expensive because of crop failures the habit in this respect could not be judged from the amount consumed at the time; however, 6 families were making a point of having fruit daily. In 10 families the diet was felt to be unsatisfactory in a number of ways—too little milk and fruit, too few vegetables, and very little variety of any sort.

Clothing.

With a few exceptions the mothers observed were dressed suitably to the season and their occupations. Those seen at the office of the board wore simple cotton dresses, clean and of presentable appearance. At home they wore wash dresses which were proper for their work. The children at play wore overalls or cotton dresses, reasonably whole and clean.

All the mothers did sewing. Some of them received generous gifts of clothing and were skillful at altering garments, so that they were able to keep their children very prettily as well as comfortably dressed.

Housekeeping and household management.

The mothers were all at a disadvantage in buying food supplies, because of having such limited space for storage. Only two mothers were able to store potatoes and other vegetables for the winter. Six mothers did some canning and made jellies and preserves for winter use. Three rendered their own lard. The crowded housing also made home baking impracticable in summer, though most of the mothers said that they did their own baking in winter. For the most part the buying was done in small amounts from day to day, or even from meal to meal.

The case workers had taken special pains to encourage saving during the summer for the winter coal, and most families had put away at least a part of the money necessary for this purpose.

The management as to clothing was excellent in many cases. The mothers had used much ingenuity and skill in this respect. One showed a good-looking suit for her little boy which had been made from a skirt. Another had bought remnants at a few cents each out of which she had made children's dresses, embroidering them tastefully.

Fifteen of the homes visited were beautifully clean and orderly, and in four others the standard was moderately good; four houses were not clean, and two were disorderly. The degree of personal cleanliness was surprisingly high. The mother of five small children in a house without a bathroom was giving each a daily bath. Other mothers were giving baths semiweekly or oftener to the whole family and equally frequent changes of underwear.

Examples of families aided.

Mrs. R, a native-born American who had been receiving aid for five years, lived with her five daughters in a three-room flat on a crowded street. Two of the daughters were working. The rooms were of fair size, with clean walls, and each room had an outside window. Two beds stood in the bedroom and one in the sitting room, which contained also rocking chairs, pictures, a sewing machine, and a table. The sitting-room was carpeted and was heated by a stove in winter. The cooking was being done on a gas stove. The kitchen was very clean; it contained a refrigerator and sufficient equipment for cooking, serving, laundry work, and cleaning.

Though the family ate meat twice daily, they had no fresh milk; instead they drank coffee with canned milk. They said they did not like vegetables and did not often have them. They had fruit almost every day.

The clothing was good. The mother showed with pride the pretty dresses which the older girls made for themselves.

A daily paper and a weekly church paper came to the house, and the public library was used for additional reading matter.

The family was fond of picnics in the park. One of the girls sang in the church choir, and all went to church and Sunday school. The two daughters at work went to a picture show once a week and the younger children once a month.

Mrs. F, an Austrian by birth, had been receiving aid during three years. She and her three little girls also occupied a three-room flat, which was clean and fairly well lighted and ventilated, but had an outside toilet. She supplemented her allowance by caring for a baby, who had a small bed to himself in the sitting room. The mother slept in the bedroom with her two daughters of 6 and 7 years, while the older child had a cot in the same room. The beds were clean and comfortable, though she said that her sheets were

getting very old, as she had not been able to buy any since she had received aid. Her sitting room had a homelike air with its good rug, chairs, table, and sewing machine.

In the kitchen were a gas stove, a dining table, and a refrigerator, a sufficient supply of dishes, cooking utensils, and satisfactory laundry and cleaning equipment. One quart of milk a day was bought for the baby, but the older children had cocoa made with canned milk. Each day except Friday she spent about 25 cents for meat. Almost every day she had a vegetable besides potatoes. In the fall and winter she had apples, and at the time the family was having fruit often. She said that she gave it to the children in place of a cathartic. In the winter she baked bread.

She had made very tasteful little dresses for the children out of remnants bought for a few cents each. Both she and the children were clean and neat. Her income was \$80 a month, of which she received \$20 for the baby's board, \$18 for home laundry work, and \$42 as board for her own children.

STATE PROVISIONS AFFECTING LOCAL ADMINISTRATION IN MASSACHUSETTS.

PROVISIONS OF THE LAW.

Aid to mothers with dependent children was administered in Massachusetts under the mothers' aid law of 1913,³⁵ which provided that two-thirds of the aid granted in each case should be paid out of town or city funds on the order of the local overseers of the poor, and one-third out of State funds, if the Massachusetts Department of Public Welfare approved the grant. A family with no legal settlement in any town or city of Massachusetts became a "State case," and all the aid was given from State funds. Before reimbursement was made to the city or town a case received the indorsement of the department of public welfare. It was the necessity for this indorsement before State funds could be drawn upon that gave the State its supervisory hold over the local administration. The State visitor investigated every case before aid was granted, and the commissioner of public welfare might disapprove the grant, or he might request the overseer in charge of the case to change its amount. If the local overseer refused to comply with the recommendations of the commissioner, the latter might refuse approval, in which case no State money could be drawn. This power was seldom used, since agreement was usually possible.

In 1913, the first year of granting such aid, the appropriation for reimbursing the towns and cities was \$175,000. It has been increased for each year since then, and for 1921 it amounted to \$900,000.

The Massachusetts law provides that aid may be given to "all mothers with dependent children under 14 year of age, if such mothers are fit to bring up their children." The policies drafted by the department of public welfare³⁶ as to the application of this act state that—

Not only widows, but also mothers of dependent children under 14 years of age, whose living husbands are totally incapacitated by reason of chronic illness or insanity, or are imprisoned for long terms, or who are divorced or legally separated, if not otherwise excluded, are eligible for relief under this law.

It is further required that—

Aid should not be granted to a mother whose husband has deserted his family unless an application has been made for the issuance of a warrant for nonsupport under the provisions of chapter 273 of the General Laws: nor until after one year has

³⁵ Massachusetts Laws, 1913, ch. 763.

³⁶ Policies Relating to the Administration of Mothers' Aid Law, p. 4. The Commonwealth of Massachusetts, Department of Public Welfare, Boston, 1921.

elapsed since desertion occurred. * * * Aid under this law should not be granted to a mother unless there is a reasonable probability that need of such aid will exist for more than one year. * * * Aid should not be granted to a mother who has funds either in the form of cash or securities or other property readily liquidated in excess of \$200. * * * The department will approve aid to an applicant who has an equity in real estate upon which the family resides not exceeding \$500, the assessed value of which does not exceed \$2,500 * * *.

The law states that the aid furnished should be sufficient to enable the mother to bring up her children properly in their own home. The boards of overseers, subject to the approval of the State department, determine the amount of aid to be granted in each case.

THE LOCAL ADMINISTRATIVE AGENCY.

The unit of local government in Massachusetts is the city or town, instead of the county. There are 333 towns and 38 cities in the State, each with a board of overseers of the poor, which is responsible for all public relief. The overseers may be appointed or elected. Sometimes they serve for only one year, and in such cases there can be little continuity in their work. In the smaller places, they are often also the town selectmen, with little time to devote to their duties as overseers. They frequently come to the statehouse to consult about mothers' aid work, and they depend upon the State visitor for advice in regard to it. They are beginning to realize the need of trained visitors, and the boards of Reading, Winchester, Lawrence, Cambridge, Quincy, Worcester, Lynn, and Springfield have all employed women visitors.

A quarterly report on each case receiving aid had to be sent in by the overseer of the poor to the State department of public welfare. This report covered school attendance or employment (with statement of earnings) for each child in the family, the employment of the mother, the physical condition of each member of the family, and the income from all sources.

SUPERVISION BY THE STATE DEPARTMENT OF PUBLIC WELFARE.

The contact of the State department of public welfare with the work is much closer here than in any other place included in the study. The plan of supervision would probably be impracticable, from a geographical standpoint, in any of the larger Western States. In the division of aid and relief there was a director of mothers' aid, who had 10 field visitors under her supervision.

The State visitors were appointed through civil-service examinations given by a committee of social workers. The minimum educational requirement was graduation from a high school. One of the visitors was a college graduate and two had taken courses at a school of social work. Boston was divided, fan shape, into seven parts;

each section included some outlying territory and formed a district for one of the State visitors. The three remaining visitors covered the rest of the State. There was a local office in Springfield and one in Lawrence, but the visitors in these districts spent one day each week at the statehouse, where all records were kept.

In the year ended November 30, 1920, 3,131 cases were reported from the State. The average amount of work per month covered by each of the 10 State visitors during the six months previous to June 9, 1921, included 10.4 first investigations, 36.4 reinvestigations, and 3.6 cases reviewed with the overseers of the poor.

The first investigation made by a State visitor always included reports from all social agencies which had had contact with the family. Letters asking for such reports were sent out for each case. Relatives and employers were frequently, though not always, visited. Births, marriages, and deaths were usually, though not always, verified. The visitor's report contained a description of the house and sometimes of the food, clothing, and other elements of the standard of living; also the main points of the family history, covering at least the industrial life of the father and the mother and information about each child in the family, such as school grade and physical condition. If a question of health was involved, an examination was arranged for.

A reinvestigation of each case twice a year was planned for, but the volume of the work—there was an average of 313 cases for each State visitor during the preceding fiscal year—had made this impossible. When the semiannual visit to a family was not possible a conference was had with the local overseer. If on reinvestigation any change was felt to be desirable the case was reviewed with the overseer in charge of it, and an agreement was reached. If the State visitor found the family in need of special service—such as adjustment of living conditions, procurement or change of work, or care of health—she took up the matter with the local overseers and cooperated with them in making plans. The visitor often brought mothers or children from even the far-western parts of the State to Boston for medical or dental care. In these instances the overseers paid the railroad fare and hospital expenses and continued the allowances to the families as well. If the mother had to be away from home for health care, the overseers would pay for a housekeeper during her absence. In one instance a bill of \$70 for dental work for one mother was incurred.

Case records kept by the mothers' aid department were in the usual case-record form, containing a face card, copies of all correspondence and of the reports from the overseers, and history sheets on which all visits and interviews were entered in chronological order.

The State department of public welfare furnished the overseers with the blank forms for the mothers' applications for aid, for the overseers' first report asking for reimbursement, and for the quarterly reports. It also sent to the overseers a schedule for estimating the family budgets and had for distribution an excellent little pamphlet outlining the law and the policies of the department governing mothers' aid work.

BOSTON.

In 1920, Boston had a population of 748,060, of which 238,919 were foreign-born whites. However, almost half of these were English-speaking—Irish, English, or English-Canadian; 54 per cent were of non-English-speaking nativity. Of the latter group, 30 per cent were born in Italy, 29 per cent in Russia, 6 per cent in Poland, 5 per cent in Sweden, 5 per cent in Germany, 3 per cent in Lithuania, and 2 per cent in Greece. Syrians, French-Canadians, Austrians, Armenians, French, and other nationalities in smaller numbers made up the remaining 20 per cent.

ADMINISTRATION.

Overseers of public welfare.

The city board of overseers of public welfare—formerly called “overseers of the poor”—consisted of 12 members appointed by the mayor. It employed an executive secretary, a force of 12 men for field work (who had been appointed through civil-service examinations), and a clerical force. The board held weekly meetings, at which it passed upon all applications for relief. The secretary might give emergency relief before taking up the case with the board, but where this was done the matter was brought up at the next meeting for approval and further recommendation. Mothers' aid cases were considered along with other applications for relief. The field workers, who were all men, took turns at appearing before the board, each coming about once in three weeks. At that time he presented to the board a report of all work done by him since he last came before them.

Volume of work.

The mothers' aid cases reported from Boston to the State department of public welfare for the year ended November, 1920, numbered 1,091. The overseers' office carried this work along with all other cases of public relief, and each of the field workers did some work with from 250 to 400 cases each month. Each visitor had his own district and cared for all applications for relief that came from it. The work was centered in the one downtown office, but some of the visitors had the use of an office in the outlying parts of the city, where they could interview their clients.

Records.

The results of the original investigation of a case were entered upon a form, which covered names and ages of the members of the family, cause of death or incapacity of father, facts regarding settlement, and income of the family. This was filed away and no further entries were made on it. A similar form was kept at his desk by the visitor, and on this was recorded all subsequent work. When folded it fitted into a legal-size envelope, and the visitor frequently carried it when he planned a visit to the family. The file included a copy of the quarterly report sent to the State office and frequently other material gathered through contact with the family. But the last entry was often many months old, indicating that the reports were not kept up to date. The reports were typed, and the visitor had stenographic service for this work. In addition each visitor kept a card file with a card for each family on which were entered changes of address and the amount of the grant.

Procedure in granting aid.

In applying for aid the mother filled out a blank or gave the information it required to the visitor at the overseers' office. It covered the main points in her circumstances. The visitor then made an investigation, which included a visit to the home and an interview with the family. If he suspected a misstatement concerning the marriage or property interests, the public records were consulted. Proof of legal settlement was always secured. The results of each investigation were presented by the visitor with a recommendation to the overseers at their weekly meeting. He might have already given emergency relief. If the board granted aid, it could begin immediately, and a report was sent to the State department of public welfare on the blank provided with a request for reimbursement of the State's portion.

Upon receipt of the report from the overseers the State visitor made an independent investigation. Letters asking for a report were sent to all social agencies who had known the family. Relatives were frequently but not always visited. The marriage of the parents and the death of the father were always verified, and usually the dates of birth of the children. The State visitor's report of the first home visit in each case contained information about the history of the family, covering at least their industrial life, enough information about each child to indicate that each had had individual attention (usually a statement of school grade and of physical condition as indicated by appearance), description of the house and furniture, and sometimes of the food, clothing, and other elements in the living standards.

A family budget was then estimated, following a schedule which had been carefully worked out by the State department with the help of the Boston Dietetic Bureau and two committees appointed

in 1920 to make estimates on costs of food and clothing.³⁷ From the budget estimate was then subtracted the income of the family from all sources, the remaining sum being the amount which the grant should cover. The director of mothers' aid then reviewed this material with the State visitor, and together they decided upon a recommendation either for approval of the grant made by the overseers, for a change in it, or for disapproval. Their recommendation then went to the director of the division of aid and relief, and with his approval became the recommendation of the department of public welfare. The State department frequently requested an increase in the original grant and forwarded its reasons to the overseers, who then reconsidered the matter—not always favorably. Before the city could be reimbursed for the State's one-third share of the expenditures, the actual grant had always to be approved finally by the department of public welfare of the Commonwealth.

The allowance was paid weekly in cash. To lessen the congestion, the payments were distributed throughout the week, and each mother came to the office of the overseers of public welfare on the day of the week to which she had been assigned. Nevertheless almost 200 mothers came each day, and 20 to 40 women were often standing in line before the window at which they received the money. In some of the outlying districts payment was made by the visitor at a local office in the neighborhood.

THE FAMILIES AIDED.

Children benefiting by grants.

In January, 1921, 1,102 families in Boston were receiving mothers' aid. A group of 195 families were selected for analysis of record data. In these 195 families were 654 dependent children receiving aid. Families consisting of two, three, and four children were the most frequent, though a number had five or six children. The size of families was as follows:

Number of children in the family.	Number of families.
Total.....	195
One.....	10
Two.....	46
Three.....	62
Four.....	42
Five.....	18
Six.....	12
Seven.....	4
Eight.....	1

³⁷ The director of the Boston Dietetic Bureau acted as chairman of the committee on food estimates; the director of the minimum-wage department of the State bureau of labor and industries acted as chairman of the committee on clothing costs. These committees had presented reports, which the mothers' aid department was using in making its schedule.

The ages of the children aided were reported as follows:

Ages.	Number of children.
Total.....	654
Under 4 years.....	147
4-5 years.....	101
6-7 years.....	109
8-9 years.....	160
10-11 years.....	91
12-13 years.....	75
14-15 years.....	29
16 years.....	28

Causes of dependency.

The death of the father was the cause for dependency in 97 of the 195 families studied. Sixteen fathers had deserted their families, 5 were in prison, and 77 were incapacitated. Of the last group 48 had tuberculosis and 6 were insane.

Nativity of the mothers.

Two-thirds—67 per cent— of the mothers were of foreign birth, the largest numbers coming from Ireland, Russia, and Italy. The nativity of the 195 mothers was reported as follows:

Nativity.	Number of mothers.
Total.....	195
Native born.....	62
Foreign born.....	130
Ireland.....	36
Russia.....	30
Italy.....	26
Canada.....	10
Newfoundland.....	5
Scotland.....	5
Syria.....	4
Poland.....	3
Other.....	11
Not reported.....	3

ASSISTANCE GIVEN.

Allowances.

According to the law the aid furnished was to be sufficient to enable the mother to bring up her children properly in their own homes. The overseers of public welfare decided upon the amount of relief necessary in each case. They had adopted a rule that the total income of a family should not exceed \$4 per week per person, using this as a rough standard for the necessary budget, and basing the grants upon it. No other budget estimate was used.

²⁸ Both children were unable to work; one had spinal trouble; the other was a dwarf and mentally defective.

The amounts of cash aid given to the 195 families selected for study were as follows:

Monthly allowance. ^a	Number of families.
Total.....	195
\$15-\$19.....	4
\$20-\$24.....	8
\$25-\$29.....	5
\$30-\$34.....	9
\$35-\$39.....	12
\$40-\$44.....	25
\$45-\$49.....	5
\$50-\$54.....	20
\$55-\$59.....	6
\$60-\$64.....	17
\$65-\$69.....	41
\$70-\$74.....	8
\$75-\$79.....	13
\$80-\$84.....	2
\$85-\$89.....	7
\$90-\$94.....	1
\$95-\$99.....	5
\$100-\$110.....	5
Not reported.....	2

In addition to the cash allowance, each family received one-fourth ton of hard coal once in three weeks during the winter. If a death occurred in the family, the overseers paid the funeral expenses. If a mother needed hospital care they paid the hospital bill and, if necessary, increased the weekly allowance to cover the wage of a housekeeper to care for the children while she was away.

Service to the families receiving aid.

Before the quarterly report on each family receiving aid was sent to the State department of public welfare a visit was always made to the home by a district visitor from the overseers' office. As a rule, this was the only visit to the family, since the volume of work carried by the visitors made it impossible for them to maintain close contact with every family. A reinvestigation was made if a new situation was known to have developed, and in some instances frequent visits were made by the city workers. The visitors often interviewed the mothers when they came to the office each week for their allowances, although a clerk paid out the money.

The State department of public welfare, on its part, planned re-investigation of each case once in six months. A home visit was made, during which the family situation was gone over with care. All sources of income were reported, and a new budget was made out. Health conditions were noted, school progress was recorded,

^aEstimated on the basis of four and one-third weeks to the month.

and frequently a report was made as to the family's sleeping and eating customs and the way in which the members were dressed.

The number of visits by the city and State workers to each family receiving aid in Boston for at least six months prior to August 1, 1921, are correlated in Table IX.

TABLE IX.—*Home visits by State and city field workers to families receiving mothers' aid in Boston for at least six months prior to August 1, 1921.*

Number of home visits by State visitors.	Total families.	Families receiving specified number of home visits by city field workers.								Families having representative frequently interviewed at district office.
		Total.	2	3	4	5	6	8 and 12.	Not reported.	
Total families.....	195	176	54	19	8	3	4	2	86	19
1.....	66	58	30	8	2	1		2	15	8
2.....	80	75	18	10	2		3		42	5
3.....	28	24	5	1	1		1		16	4
4.....	6	6			1				5	
5.....	2	2			1				1	
6.....	2	1							1	1
Not reported.....	11	10	1		1	2			6	1

If the State visitor noticed a remediable physical defect, or symptoms that denoted need of medical care, she referred the family to a health agency or called the attention of the city field worker to the condition. Both State and local workers used the excellent facilities for free medical care which Boston afforded. In 1920 the Boston Dispensary offered to care for 100 families receiving mothers' aid; that is, offered to examine all the children and to give the medical attention required in each case.

The Dietetic Bureau of Boston had instructed about 50 mothers' aid families, doing with them the sort of work illustrated in the following stories:

Mrs. K was a Polish woman deserted by a husband who had always been brutal to her and had never properly supported the family. The three small children appeared to be unusually well nourished. Mrs. K said that she gave them breakfasts of cereal and milk; dinners of egg or meat, with vegetables and fruit; and suppers of a vegetable, with bread and milk. In answer to compliments on her wholesome diet, she said in her halting English: "Oh, I did not eat like this. Before, I used to eat—all the days—meat, very sick, and the children sick, too. A lady came to my aid and showed me how to cook things. Now I have the things. The records of the dietetic bureau showed that when it was made in October, 1920, Mrs. K had rheumatism and was apparently undernourished, though no medical

examination was made. Mrs. K was spending most of her money as soon as she got it, and at the end of the week was having very little food. She was using a great deal of meat and very little milk or vegetables or cooked cereals. Thirteen visits were made to the family during the three months from November 1, 1920, to February 1, 1921. The mother was taken to market for lessons in buying and was taught by demonstration to prepare such simple dishes as oatmeal mush, rice pudding, vegetable soup, apple sauce, stewed prunes, and creamed carrots. She was also taught to set aside each week money for the rent, gas, and incidental expenses, and to plan her food expenditures on the amount of money remaining, setting aside a sum for fresh vegetables and fruit. At the end of the lessons the family was having from 2 to 3 quarts of milk a day, and vegetables and a cooked cereal, and the health of both the mother and the children was much improved.

Mrs. H was found to be managing wonderfully in keeping her children healthy and well clothed on an income about 10 per cent below the estimated budget. She was apparently giving them not only a wholesome diet, but food that was attractively prepared. Three of the five children who, the year before, had been reported to be very delicate, were plump and rosy and bright-eyed at the time of visit. When asked how the dietetic bureau had helped her, she said that before her marriage she had "worked out for Yankee ladies," so that she knew how to cook expensive foods very well. She did not, however, know how to cook the cheaper and simpler dishes, and these were the ones taught her by the dietetic bureau, chiefly through recipes which she was perfectly able to follow.

In the C family two of the five children were under weight, and the mother was worn out, run down, and nervous from nursing a baby who was over 1 year old. The income—\$14 a week—was inadequate, and was later increased to \$16, but the budget estimated by the dietetic bureau was \$23.80. The family received occasional gifts. The money for food had been very unwisely laid out on a great deal of meat and sweets, with few vegetables and not enough milk. Meals were irregular and bedtime late. After a period of comparative indifference the mother became very much interested in the instructions of the bureau, and the undernourished children tried to eat the things necessary for them to gain in weight. They stopped drinking tea and coffee and eating sirup on their bread, and put most of the money formerly spent on meat into milk and vegetables. Meals became regular and bedtime early. The mother was very appreciative, but the nutrition worker was discouraged with the inadequacy of the income, which prevented more rapid progress.

Mrs. T refused to give any credit to the nutrition worker for her very healthy looking children and comfortable home, saying that she knew previously all the things that the worker had told her. The State visitor, however, said that there had been a very marked improvement in the home and children, which she ascribed largely to the work of the dietetic bureau.

The use of nutrition clinics of the hospitals and the dispensaries was also beneficial. The State visitors paid special attention to the food and urged milk and vegetables in the diet. The director of the mothers' aid department had arranged some conferences of her staff with the director of the dietetic bureau and was planning for them a regular course of lessons on dietetics.

STANDARDS OF LIVING.⁴⁰

Characteristics of the families visited.

The 34 families selected for special study were chosen from the list of those who had been receiving aid for two years or longer, "except for two families who were chosen to illustrate special points. Since the total list was very large in comparison with the number of homes that could be visited, with the aid of the secretary of the overseers of public welfare and the director of the mothers' aid department families were selected from localities where living conditions were typical of larger districts. Three families visited had been receiving this form of aid for seven years, 2 for six, and 1 for five, while 7 had had help for four years, 6 for three years, 8 for two, 6 for one, and 1 for something less than one year.

The geographical distribution of these families was as follows:

	Families visited.
Total.....	34
North Boston.....	12
Brighton.....	5
Charlestown.....	4
Roxbury.....	4
Allston.....	3
East Boston.....	3
South Boston.....	3

Of the 34 mothers, 27 were born outside the United States—10 in Ireland, 5 in Italy, 6 in Russia, 3 in Poland, and 3 in Newfoundland.

In 32 of the 34 families a satisfactory interview was obtained with the mother or an incapacitated father. In 2 cases the information was incomplete, because only the children were at home at the time of the interview.

Housing.

The housing of the families visited differed widely in character in the various sections of the city. A number of the families living in

⁴⁰ Data were secured through home visits by the writer.

⁴¹ See p. 1 for general plan of selection of families.

Brighton and Roxbury had separate cottages, with yards and garden space. In the more crowded parts of the city, where the homes were in tenements, there was no near-by play space for the children, except the streets. Care had apparently been exercised in the selection of rooms, for almost all of those seen had outside windows and were as well lighted and ventilated as was possible in the more crowded parts of the city. Two flats had each one dark room without an outside window. In both cases the openings into adjoining rooms met the requirements of the housing law. Four of the homes had bathrooms; the others had inside toilets, which were usually shared with one other family.

Household equipment.

In 14 of the homes the household equipment could be considered adequate. In each of these there were a sitting room with floor covering and good chairs; enough beds so that not more than two members of the family need sleep in one, and sufficient linen and warm covers for the beds; a cooking stove with an oven that would bake, and a heating stove; a gas range or plate for summer cooking; sufficient utensils for cooking, cleaning, and laundry work; closets or chest of drawers for clothing; a sewing machine; enough dishes to make a family meal possible, and a dining table large enough for the family. Four of the families had a piano, and several had additional pieces of furniture.

Twenty of the homes were inadequately equipped in one or more particulars. Seven had not enough bed linen, 11 had insufficient bed covering for cold weather, and 9 had so few beds that three or more persons had to sleep together.

Food.

The information in regard to selection of food was entirely from the mother's statement; no expense accounts had been kept. The diet appeared to be adequate in 12 instances. Three families were having no milk regularly. In 12 families the children were drinking tea or coffee. Twenty-one families said that they had fresh vegetables daily and 16 that they had fruit.

In practically all cases it was apparent that the mothers had received considerable instruction about the diet of children. Almost all of them had attended food clinics at the various dispensaries and had come in contact with a nurse or other health advisor. Five mothers had taken a definite course of instruction from the Boston Dietetic Bureau.

Housekeeping and household management.

Most of the homes had pantries which would hold a month's supply of food staples, but there was no storage space for winter vegetables, even when canned. Four of the mothers said that they did canning

and jelly making. Four tried out their own lard. Home baking in the winter was the rule, and even in the warm weather 15 mothers were doing a part of their baking at home. Several were economizing by buying day-old bread and cracked eggs at reduced prices. In most of the homes food was bought in small quantities from day to day.

The clothing seemed to be economically managed. Some of the women did very clever work in making over garments bought at rummage sales or secondhand shops. One cobbled the children's shoes. Several made underwear and pillow slips out of flour sacks. Very few had incurred debts.

In 17 homes the housekeeping was excellent, in 10 others it was fairly good, and in 7 it was below a fair standard of cleanliness and order.

Examples of the families aided.

Typical of families visited are the following:

Mrs. J, an Irish-American mother, had been receiving aid for almost three years. She lived with her six children in a first-floor flat of five rooms and bath in an old four-family frame house. The front of the house was almost flush with the street, but at the back there was a little stoop and a tiny yard in which the younger children were playing. The older children were in the narrow street on which the house faced, playing with a dozen or more other children from the neighboring flats. Within was a somewhat disorderly but clean kitchen, equipped with the necessary utensils for cooking and cleaning, and for the preservation of food. These were old but in fairly good repair. The dining table was large enough for the whole family. The sitting room had a carefully preserved carpet, two or three rocking chairs, and a lounge. The floors of two of the three bedrooms were bare. The three beds had fairly good mattresses and sufficient covers, sheets, and pillowcases; with the sitting-room couch, these afforded comfortable sleeping arrangements. The weekly budget, as calculated by the State public-welfare department, was \$27.45, to be divided as follows: Food, \$15; rent, \$3.75; fuel, \$2.70; and clothing, \$6. No allowance was included for household supplies or incidentals. On the basis of this budget the State department had recommended to the overseers an allowance of \$25 per week. The board of overseers had granted \$21 and the winter coal.

Much of the clothing had been given by friends and relatives, and Mrs. J was very clever at making over and repairing. Before her husband's death—he was earning \$30 a week in 1918—she had bought a set of tools for cobbling. She said that when she brought them home Mr. J thought she must be "light in the head," but later he, as well as she, learned to use them. She could buy for a quarter a piece of leather that would make good new soles for the younger children's shoes. Their winter underwear she had made from younger *garments* bought from the Government stores for a few cents each.

She had also purchased at these stores discarded sailor suits and had made them into very neat-looking suits for her boys. The children looked well dressed.

The food was good. When the family was first given aid Mrs. J was suffering from constipation, and two of the children were underweight. They had been referred to the Boston Dietetic Bureau and to the Boston Dispensary, where Mrs. J attended the constipation class. At the time of the visit they appeared well nourished, and Mrs. J related proudly that they were so well that none of the others took diphtheria from the baby when he had had an attack a few weeks before. She bought 4 quarts of milk daily and gave the children neither tea nor coffee. The breakfast was usually of cereal—oatmeal being the favorite—and milk. There was sometimes in addition apple sauce or eggs. The dinner consisted of potatoes, another vegetable (often creamed), and pie or a simple pudding. Meat was added three or four times a week. For supper they had fruit, home-baked bread, milk, and usually potatoes.

The mother said that she could not afford either a newspaper or a magazine, and their recreations were found in visiting friends and in play with the neighborhood children.

Mrs. W, the Polish mother whose story has already been partly told,⁴² had been receiving aid for three and one-half years. She lived with her three small children in a fairly well-lighted, three-room flat located in the crowded part of East Boston. Her kitchen was clean and orderly, and the equipment was sufficient for her simple housekeeping. There was a bed in each of the two other rooms. In the sitting room were also to be found a rocking-chair, a table, and two small rugs on the clean bare floor. She had four sheets, six pillow slips, and enough warm covers.

Both the mother and the children were neatly clothed in wash dresses. She said that their clothing was almost all given to them.

In her broken English, Mrs. W spoke with great enthusiasm of the teaching she had received from the dietetic bureau. She bought 3 quarts of milk daily. Each member of her family had a small quantity of meat or one egg every day, also potatoes and another vegetable, and fresh fruit almost every day, or, when that cost too much, prunes or other dried fruit. For breakfast and supper they had cereal and milk. In the winter she did her own baking, but in the summer baking made the small rooms too hot.

Her allowance was \$14 a week, and one-fourth of a ton of coal every three weeks during the winter. With this allowance and such gifts as she was receiving she maintained her household simply but adequately.

On a near-by street in a similar flat lived an Italian mother, Mrs. O, with her four children. This family was more crowded than were the W's, and it was necessary for three children to sleep in one

⁴² See pp. 96-97.

bed. Mrs. O said that she had only one heavy cover for each bed, and in cold weather they put their coats on top.

Their food was not so well planned or adequate as the W's. They had 2 quarts of milk daily, but the mother said that she could not buy vegetables every day and that she bought fruit on Saturdays only. For breakfast she served bread and cocoa and vegetables. Dinner consisted of homemade macaroni and beans on four days a week, and of meat and vegetables on the other three days, with eggs occasionally.

The mother and the children were well dressed, and the house was very clean. Mrs. O had been receiving aid for three years.

The budget for this family as estimated by the State department was \$25 a week, and the aid granted was \$15. The mother earned money irregularly by making lace at home—but probably not more than \$4 a week—and no other income was indicated on the records. They had a newspaper sometimes, but not regularly, and the mother said they did not go to the picture shows. The boys played in the parkway near by.

Mrs. P, born in Newfoundland, had been receiving aid for more than four years. She and her six children lived in a frame cottage of six rooms on a quiet residence street in an outlying part of the city. There was a small, grassy, well-shaded, front yard, and a still smaller one in the rear, but no space for a garden.

The sitting room was well furnished with comfortable chairs, a good carpet, and a table. The dining room contained a good table and substantial chairs. The kitchen was equipped with all the necessary utensils for cooking and preserving food, and for laundry work and cleaning. Upstairs were three bedrooms, each with a good bed, adequately furnished.

The clothing appeared to be adequate. The mother was careful to see that the children wore rubbers and well-soled shoes during stormy weather. She was a clever seamstress and made over much of the children's clothing from gifts and from materials which she had had for years. This family had previously maintained a high standard of living.

The food was sensibly planned, but did not seem quite adequate for the two delicate children. Only 2 quarts of milk were taken daily. Sunday's meat was made to last for two or three days, and was frequently the only meat bought during the week. They usually had a vegetable once a day, often a present from a neighbor's garden. Some fruit was used, but not every day. Home-baked bread and cereal completed the menu.

No newspaper or other periodical was taken. There was excellent play space for the children, and in a neighborhood where other children were well trained and carefully brought up. The mother's social life, like that of her neighbors, consisted of church-going, visiting, and similar activities.

Haverhill.

Haverhill, Mass., about 60 miles northwest of Boston, is a thriving industrial city. Shoemaking is the chief industry. In 1920 there were 53,884 inhabitants, of whom 13,307 were foreign-born whites. Of these, the largest groups came from Canada (35 per cent, of whom nearly three-fifths were French-Canadians), Italy (13 per cent), Ireland (12 per cent), Greece (10 per cent), and Russia (9 per cent); the remainder came from England and a number of other countries.

ADMINISTRATION.

The overseers of the poor.

The work here, as in Boston, was administered under the State mothers' aid law. There were three overseers of the poor, who were appointed by the city council every three years. Each overseer was responsible for his own section of the city. A full-time clerk was employed by the board, with one assistant and one stenographer. It was the assistant clerk who looked after the families receiving mothers' allowances. The board of overseers held a monthly meeting, and applications for this form of aid were considered by the whole board. The overseer in whose district a family lived, acting in cooperation with the clerk or his assistant, settled all other questions concerning their welfare.

The assistant clerk, who had the chief responsibility for the families receiving aid, seldom visited them, since her clerical duties made it necessary for her to be in the office most of the time; but she saw the mothers each week when they came in for their allowances and was able to form friendly relationships with them.

Records.

The records consisted only of the papers prepared for the reports to the State department of public welfare. A card file was kept, in which entries were made of all aid given to each family.

Procedure in granting aid.

The mother made application for aid to the overseer of her district or at the office of the board of overseers, which was in the city hall. An investigation was made, sometimes by the overseer in whose district she lived, sometimes by the clerk or his assistant. This investigation was chiefly concerned with the material resources of the family. As a rule, relatives were not visited. If relief seemed to be

immediately needed it was given at once with no other formality than a consultation between the clerk and the overseer. The amount of the grant was determined by the estimated weekly budget of income and expenses, the latter being computed from a schedule furnished by the State department of public welfare.

THE FAMILIES AIDED.

Children benefiting by grants.

In August, 1921, 33 mothers were receiving aid for 108 dependent children. In 11 families two children were being aided—in 3, three; in 10, four; in 2, five; and in 2, six.

Three children 14 years of age or over were receiving aid, two of whom were reported as being physically unable to go to work. The ages of the children receiving aid were as follows:

Ages.	Number of children.
Total.....	108
Under 4 years.....	19
4-5 years.....	21
6-7 years.....	20
8-9 years.....	17
10-11 years.....	16
12-13 years.....	12
14-15 years.....	2
16 years.....	1

Causes of dependency.

The death of the father was the cause of the dependency in 25 families. In 6 cases the fathers were incapacitated, 2 being insane and 3 having tuberculosis, and for the sixth the cause of incapacity was not reported. One father had deserted and one was in prison.

Nativity of the mothers.

Twenty-one of the mothers were known to have been born in foreign lands; the birthplace of one mother was not reported. Six mothers had come from Russia, five from Canada, three from Greece, three from Italy, two from Ireland, one from Austria, and one from England.

ASSISTANCE GIVEN.

Allowances.

The board of overseers had not adopted any restrictive rulings, and it usually followed the recommendation of the State visitor. A weekly allowance was given in cash, but fuel was bought wholesale and furnished to the families. Household furnishings were also given as needed, and were usually bought by the assistant clerk. In August, 1921, the total payments made for the 104 children in the 32 families for whom the amounts of the pensions were reported was

\$2,046.74, the average per child for the month being \$19.68. The amounts of allowance per family are shown as follows:

Monthly allowance.	Number of families.
Total.....	33
\$25-\$29.....	1
\$40-\$49.....	4
\$50-\$59.....	9
\$60-\$69.....	9
\$70-\$79.....	4
\$80-\$89.....	3
\$90-\$99.....	1
Over \$100.....	1
Not reported.....	1

Service to the families receiving aid.

Twenty-nine families had been receiving aid for the full six months prior to August 1, 1921. The visits recorded during that period showed that each of 7 families had been visited twice by an overseer and twice by the State visitor; overseers had made two visits to each of 17 additional families, 2 of whom had been called upon four times by the State visitor and 15 three times. Two families had been visited by overseers three times, and by the State visitor four times. Three families had received no visits from the overseers; 2 of these had received three visits, and the other family four visits from the State visitor. Two families received seven visits altogether; 4 received six; 13, five; 8, four; and 2 received three. The assistant clerk, as previously noted, saw the mothers frequently at the office in the city hall.

The work of the State visitor in looking after the health of the families was well supported by the overseers. Remediable defects were being corrected; teeth were cared for, and medical service furnished wherever necessary. In one family visited by the writer serious operations had been performed for two of the children in a Boston hospital.

STANDARDS OF LIVING.⁴³

Characteristics of the families visited.

Fourteen of the 33 families were visited in their homes by the writer. They were chosen from those who had received the aid for the longest periods. One family had received aid for seven years, 1 for six years, 3 for four, 6 for two, and 3 for one year.

Of the 9 mothers born in foreign countries, 3 were from Canada, 2 from Italy, 2 from Russia, 1 from Austria, and 1 from Ireland. All but three mothers spoke fairly good English.

⁴³ Data were secured through home visits by the writer.

Families of from two to six children living at home were represented. Two families had two children, 2 had three, and 2 had six. Four families had four, and 4 had five children. Of a total of 58 children 51 were receiving pensions. In six families there were children of working age. In one case the child was not strong enough to work and the doctor had advised that she should be kept in school; in another family both the boys over 14 years of age were out of work, although one of them was at the time of visit picking and selling berries.

Housing.

All except three of the buildings in which the families visited were living were situated on quiet streets where the houses were not closely crowded and where there was plenty of open space in which the children could play without going beyond reach of the mother's supervision. The three exceptions had no other play space than the street, which was lined closely on both sides with small houses. Three of the homes visited were cottages. One which was very neat and attractive, with a pleasant yard, was near the business part of the city; two were on the outskirts of the city.

Household equipment.

Sleeping arrangements were adequate except in two cases. One case has been described; in the other instance there was no heating stove, and during the winter the Polish family of five crowded into the two rooms which could be heated by the kitchen range, although they had four rooms and beds enough. There was sitting-room furniture in all the homes except one, and in this the children were small. All the families except three had gas for summer cooking, and these three had coal-oil stoves. All had either an ice box or a cellar. The latter was used for storing vegetables in winter as well as for keeping food cool in summer. All except two families had sewing machines on which the mother did home sewing. The clothing was good.

Food.

Food was fairly adequate in a majority of the families. All took at least 1 quart of fresh milk, though only two had enough to allow a pint per day for each child. Cocoa was popular because its use was taught in the schools. Six of the mothers said that the children were given no coffee or tea. Half the mothers said that they had vegetables daily, but only two had fruit every day. Home baking was done by half the mothers. In some of the families where the supply of milk and fresh vegetables seemed to be inadequate the children appeared well nourished, and it is probable that the deficiencies were made up in some way not discovered during the interview. No expense accounts had been kept.

Education and recreation.

Five families had a daily newspaper and four reported use of the public library. All the children of school age were in school. Neighborhood visiting, open-air games for the children, the activities of church, Sunday school, and school were the chief sources of recreation. Picture shows were attended occasionally by most of the families. There was evidence of wholesome family life in the homes visited.

Examples of families aided.

The homes described below were fairly typical of those visited.

Mrs. Q and her three children lived in a frame building, which also housed three other families. She had four well-lighted rooms. Back of the kitchen door was an open lot which made an excellent playground for the neighborhood children, especially as it contained a hill used for coasting in winter. The rooms were spotless. There was a well-equipped kitchen with a gas stove, and a combination dining and sitting-room with a good rug, table, and chairs, and heated in winter by a hard-coal stove. The overseers had bought a mattress during the past year, so that a separate bedroom could be arranged for the one boy of the family, who was 11 years old. The mother and the two girls occupied two beds in the second bedroom. The beds looked fresh and clean. There was no provision for keeping ice, but there was a good cellar which in winter was used for storing vegetables and in summer for keeping food cool. A sewing machine seemed to be the one piece of household equipment seriously needed. The children were neatly dressed, despite the fact that the mother had made a part of their clothing by hand.

The food seemed to be fairly adequate, except that only 1 quart of milk was used daily. The mother said, however, that they did not drink coffee, as children often do when they do not have plenty of milk. The children were delicate and had been taken to Boston for treatment. The mother had received excellent instructions regarding their food. She said that she had meat three or four times a week, eggs two or three times and oftener during the season when they were the cheapest, fresh vegetables daily during the summer, and in the winter vegetables that she had stored or canned; they seldom had fruit, because it was high and scarce. The bread was home baked and was excellent. An additional quart of milk would probably have made the diet adequate.

They took a daily paper and for additional reading got books from the city library. The activities of church, Sunday school, and school were their chief sources of recreation, in addition to which they visited the neighbors and played with the neighboring children.

The estimated weekly budget and the income were as follows:

Expenses.		Income.	
Total.....	\$20.30	Total.....	\$18.70
Rent.....	3.50	Mothers' aid.....	12.00
Food.....	10.10	Fuel, furnished by overseers....	2.70
Fuel.....	2.70	Mother's earnings.....	4.00
Clothing.....	4.00		

This left an apparent weekly deficit of \$1.60. A relative, however, gave some assistance, and it seems probable that the actual income was equal to the estimate.

Mrs. G, a frail widow with six children, lived in a dilapidated three-room cottage, situated on about 2 acres of infertile land. In order to buy this little place, the family had suffered great privation before the father's death, and the mother was now unwilling to part with it, although it could not adequately house her family. A heating stove, dishes, and bedding had been furnished them. The sleeping arrangements were still crowded, three children occupying one bed. The sitting room was also a bedroom and contained an open bed, a heating stove, a table, and some chairs.

The family raised its own vegetables, and these seemed to be used freely in the daily diet. They bought 3 pints of milk each day and had meat on Sunday. On Saturday, as a special treat, the mother bought a dozen oranges or bananas. They had a pound of butter each week, but used oil in cooking. The bread was home baked. The children appeared undernourished, though they were said to have improved during the past year.

The clothing of the family was not very presentable though perhaps sufficient for protection. They had no sewing machine, and the mother did some sewing by hand.

The income was about \$5 a week below the estimated budget, because of the irregular employment of a boy of working age. Although the standard of living here was low it had evidently been raised since aid had been granted two years before, and the State visitor had plans for further improvement.

This was the only instance seen in Haverhill of overcrowded housing, and even here the abundance of outdoor-play space did much to counteract the evil.

NORTHAMPTON COUNTY, PA.

Northampton County is best known as the seat of the Bethlehem Steel Works. The urban population of the county—which in 1920 was 68.2 per cent of the county's total population of 153,506—was engaged largely in industrial work. Among the beautiful hills were farms rich in orchards and in fields of grain and hay. Almost three-fourths of the total land area was in farms, of which about 70 per cent were tilled by their owners. The largest cities were: Bethlehem, 50,358;⁴⁴ Easton, 33,813; Northampton, 9,349; and Bangor, 5,402.

The many smaller towns were bound together by a network of trolley lines.

The foreign-born whites numbered 26,939, or 18 per cent of the total population. Of these, 30 per cent were from Hungary, 16 per cent from Italy, 9 per cent from Austria, 7 per cent from Poland, 6 per cent in each case from Czechoslovakia, England, and Russia, and 5 per cent from Germany, the remainder coming in decreasing proportions from Ireland, Greece, Wales, Yugoslavia, and other countries. Moreover, the 82 per cent of native-born whites included the Pennsylvania Germans, who through more than two centuries of residence in this country have, to a certain extent, retained their original language and customs. Another group of native born were the Moravians, also of German origin. The cities of Bethlehem and Nazareth were founded before the Revolution by the Moravians, whose culture and high educational ideals have been a factor in the development of the county.

ADMINISTRATION.

Aid to mothers with dependent children was administered in Pennsylvania under the mothers' assistance act of 1919,⁴⁵ which superseded the earlier laws of 1913 and 1915. It provides for the appointment by the governor of a county board of from five to seven women, who are responsible for the local work, and the duty of State supervision is assigned to the State board of education. The act of 1921⁴⁶ creating the State department of public welfare, however, places the State supervision in this department, and another act⁴⁷ gives to the commissioner of public welfare the power of appointing the State supervisor of the mothers' assistance fund.

⁴⁴Of the total population of Bethlehem 9,389 were in Lehigh County, making the population within Northampton County 40,969.

⁴⁵Laws of Pennsylvania, 1919, No. 354.

⁴⁶Laws of Pennsylvania, 1921, No. 425, p. 1144.

⁴⁷Laws 1921, No. 433, p. 1175.

County board of trustees.

The Northampton County Board of Trustees of the Mothers' Assistance Fund consisted of seven women, who devoted considerable time to the work and were deeply interested in it. They served without pay. The members were charged by law with the responsibility of investigating all applications for the aid and of making a recommendation concerning each to the county commissioners, who had power to grant the allowances. The Northampton board employed an executive secretary, who devoted her full time to the work of investigation and aftercare of the families. The trustees themselves also did a great deal of volunteer work. Each of them took considerable responsibility for the welfare of one or more families, making friendly visits, arranging for medical care, and at times raising special funds from private sources when it became necessary to furnish more aid than could be allowed under the law.

The executive secretary had had normal-school training and case-work experience in a charity-organization society. She had been secretary of the board since its organization two years before.

Supervision by the State.

The law provided for a State supervisor of the mothers' assistance fund, who had been given one assistant and a clerk. She was authorized to make rules and regulations governing the granting of allowances, and a copy of every petition for a grant went to her office. The State supervisor assisted the counties in forming the necessary organization and in making the plans for beginning mothers' aid work. She provided them with forms for the reports to the State, the face cards for their case records, school-report blanks, a blank for household accounts, and a schedule for estimating the family budget. She went over each application sent in to her office and gave any advice that seemed to be required. If a grant had been illegally awarded, the application was returned to the trustees, with the reasons for its being held illegal. Much of her time was spent in visiting counties, in meeting with the county boards, and sometimes in visiting families with them. The supervisor also held intercounty conferences at which the secretaries and members of the boards of a group of contiguous counties met together to discuss their common problems.

Of the 67 counties in the State 48 were organized for mothers' pensions and 22 had paid workers. New counties had applied for State subsidies and were waiting until the new biennial appropriation would permit their inclusion in the benefits offered through the act of 1919.

Sources of funds.

The State appropriation, which in 1921 was \$1,000,000, was divided among the counties in proportion to their populations. To draw State money, a county had to appropriate a sum equal to that of the State grant. The State law limited the expenses of administration in any county to not more than 10 per cent of the appropriation for the year.

Children eligible for aid, and amount of grant.

A mother of "proper character and ability," who had been a resident of the State for two years and of the county for one year, became eligible for the aid if she was a widow or her husband was in a State institution for the insane, provided she had children under 16 years of age and the aid was necessary to enable her to maintain her home. She might have an equity up to \$1,500 in her home and have a reserve fund of not more than \$400. The children of school age had to be kept in school if their physical condition permitted. Twenty dollars a month could be paid for one child, and \$10 for each of the other children. There was no maximum amount per family.

Procedure in granting aid.

The application was made to the county board of trustees on a blank provided by the State supervisor. The investigation was made either by one of the trustees or by the executive secretary. Property interests were verified by means of tax and assessment lists, and wages by examining the pay envelopes or by an interview with the employer. At least one relative on each side was interviewed—preferably grandparents, aunts or uncles. Any material relief that had been received, the history of the family and its character, were determined by consulting social agencies, the pastor, the principal or teachers of the school which the children attended, physicians, lawyers, and other persons who had known the family. The family physician was consulted as to the health of any member of the family in need of medical attention, or a medical examination was otherwise arranged for.

The results of this inquiry were reported to the board of trustees at their monthly meeting, with an estimated budget of family expenses worked out according to the schedule recommended by the State supervisor. If aid was recommended by the board, a copy of the face card of the record was sent to the State supervisor, accompanied by a supplementary statement of the circumstances of the family.

The money was paid to the mother by check. She received one from the State treasurer and one from the county treasurer each month, at such times as to make the payments semimonthly.

The case record had a face card which gave, in addition to the usual face card information, two statements of the financial status of the family—one at the time of the father's death and the other at the time the investigation was made. It had a blank also for noting the character and length of the father's last illness, and whether or not it was related to his occupation. All correspondence relating to the case was made a part of the record, and there were history sheets on which every visit and interview was reported.

THE FAMILIES AIDED.

Children benefiting by grants.

In August, 1921, 30 families, with a total of 132 children at home, were receiving allowances for 120 children. Twenty-eight of these families were dependent because of the death of the father, 1 because the father had become insane, and 1 because of incapacity of the father. The number of children receiving assistance in each family reported was as follows:

Number of children in the family.	Number of families.
Total.....	30
One.....	1
Two.....	2
Three.....	11
Four.....	6
Five.....	4
Six.....	4
Seven.....	2

The ages of the 120 children were as follows:

Ages.	Number of children.
Total.....	120
Under 4 years.....	15
4-5 years.....	19
6-7 years.....	24
8-9 years.....	19
10-11 years.....	17
12-13 years.....	21
14-15 years.....	5

Residence and nativity of the mothers.

Seven of the families lived in cities, 16 in incorporated boroughs of between 2,500 and 6,000 population, 3 in boroughs of between 1,000 and 2,000, and the remainder in distinctly rural sections.

Of the 10 foreign-born mothers, 6 had been born in Italy, 2 in Hungary, 1 in Lithuania, and 1 in Russia. Of the 19 native-born mothers, 5 were of Pennsylvania-German descent. The birthplace of 1 mother was not reported.

ASSISTANCE GIVEN.

Allowances.

The monthly pay roll in June, 1921, was \$1,220, an average of \$10.17 per child. The amounts received by the families were as follows:

Monthly allowance.	Number of families.
Total.....	30
\$15.....	1
20.....	2
30.....	3
35.....	8
40.....	7
50.....	3
55.....	2
60.....	2
65.....	1
70.....	1

Service to the families receiving aid.

The families were visited in their homes by both the executive secretary and the trustees, and they were seen at least once each month. The contact with them of both the secretary and the trustees was close and friendly. The mothers consulted them about difficulties of all sorts and seemed grateful for the support of their friendliness. In instances where the standards of living had been abnormally low, efforts had been made to raise them. Among the 30 families were 8 who had been moved in order to secure better housing or better neighborhood conditions. One of these was a Hungarian mother who spoke no English, and who at the death of her husband had been left helpless with five small children. She had known no way of managing except to crowd the family into one room of her house and fill all the others with lodgers. She was granted aid, had been moved into a flat for her family alone, and was learning English.

The number of visits recorded during the six months preceding July 1, 1921, are shown in Table X.

TABLE X.—Visits paid to families in Northampton County, Pa., that had received aid for the full period of six months prior to July 1, 1921.

Number of home visits by trustees.	Total families.	Families receiving specified number of home visits by the executive secretary of county board of trustees.			
		4	5	6	7
Total.....	129	4	8	13	4
None.....	5		1	3	1
1.....	7	1	2	3	1
2.....	2		1	1	
3.....	5			5	
4.....	6		3	1	2
5.....	3		1		
18.....	1	1			

¹ Excludes one family that was granted a pension during the period.

In most of the families interviewed it was apparent that changes for the better had been made in diet and health habits at the suggestion of the secretary or the trustees.

All children of school age were in school, and their school reports were filed with the case record. The secretary was in constant touch with the teachers and was following with interest the school career of each child. Under the Pennsylvania law it was not necessary for the allowance to stop when a child became eligible for a working permit. If he was doing well in school he might remain there and the mother would continue to receive the allowance. Two children of 14 years, who might have been employed, were finishing the eighth grade.

Instruction in English was arranged for mothers who spoke only a foreign language. Books and papers were encouraged in the homes. In several instances they were furnished by the trustees who were acting as friendly visitors.

The employment of children leaving school was the subject of earnest attention by the board, members of which had helped frequently in finding suitable work. They had also helped the mothers who were able to work to find employment and to make the necessary adjustments. One mother with four children had been provided with a sewing machine, so that she could take home sewing instead of going to a factory. In families where the mother was occupied outside the home the board considered that she should not be away more than three days a week, and that her work should permit her to be at home after school hours, when the children were there.

The mothers were helped in planning wholesome recreation for themselves and their children. Boys and girls were encouraged to belong to clubs, to use the public library, and to take advantage of neighborhood facilities for sports and social intercourse.

Earnest efforts were made to secure the necessary attention to all health needs, but the county was not well provided with facilities for free clinical care. There was a State dispensary at Easton, and another at Bethlehem, where a general clinic was held once a week. Through this clinic, hospital care in Philadelphia had been arranged for one child. Easton and Northampton each had a public-health nurse, and there were "well-baby" child-welfare clinics at Nazareth, Easton, Bethlehem, and Northampton. For several families one of the trustees had secured free dental service from a neighborhood dentist. Most of the debts mentioned by the mothers interviewed had been incurred for medical or dental services.

Expense accounts were faithfully kept in the families where there was anyone who could write. These were studied carefully by the secretary and were made the basis of her advice in regard to choice of food and management of income.

STANDARDS OF LIVING.⁴⁸**Characteristics of the families visited.**

The 19 families selected for special study were chosen from the list of those who had been receiving aid longest. Twelve had been in receipt of aid for one and one-half to two years, 4 for one year, and 3 for less than one year. Four of the mothers were of Italian birth, 1 was of Polish, 1 of Lithuanian, and 1 of Hungarian; of the 11 who were born in the United States, 2 were of Pennsylvania-German descent; the nativity of 1 mother was not reported. Five of the families had three children, 5 had five, and 5 had seven; 2 families had two children; 1 had four, and another family had six children. In 7 families a total of nine older children were at work and helping to support the family. Three families lived in Bethlehem, 3 in Easton, 2 in Bangor, 10 in smaller towns and villages, and 1 on a farm.

Housing.

The housing was excellent in most instances. All except four of the homes were cottages similar to those described later; the exceptions were well-lighted flats in fairly good repair. Two instances of crowded housing were observed. One family consisting of a mother and three children, the oldest a boy of 11 years, were living in two rooms. Another family—a mother and five children, the oldest a boy of 10—were living in three rooms. All the other families had abundant space, with four, five, six, or even seven rooms. Neighborhood surroundings were wholesome, and all the children had outdoor play space.

Household equipment.

All except two of the homes had a sitting room with comfortable chairs, a table, and usually some sort of floor covering. A number of homes had additional furniture—two had a piano and a third a parlor organ. The kitchens were equipped with coal ranges for winter cooking, and either gas or coal-oil stoves for summer use. Only one mother complained of lack of cooking utensils. All but three of the families had either an ice box or a cellar. In 16 homes there were enough beds so that not more than two persons needed to occupy one; in 3 homes the mother slept with two children. All except 2 families had enough linen, and all except 5 had covers enough for the cold weather.

Food.

The food habits showed the careful instruction which had been given in diet. No family had less than 1 quart of fresh milk daily, and all used butter. Fifteen of the families had milk enough to

⁴⁸ Data were secured through home visits by the writer.

supply each child with at least a pint every day. In three instances where the supply was below this standard it had recently been reduced because of the unemployment of the mother or the working children. Fourteen families had at least one vegetable in addition to potatoes as a part of the daily diet; the others had them only four or five days a week. Meat was used from two to six times a week, with eggs in addition. Fruit was a part of the daily diet in only four instances. It was very scarce and high at the time the visits were made.

Clothing.

With a few exceptions both the mothers and the children seen were neatly and suitably dressed. The clothing of two families looked shabby, and one mother told of a time during the past winter when the weather was stormy and the children had no shoes. The trustee especially interested in the family had supplied them as soon as she heard of the lack. The mothers all did some sewing for their families, and some of them did excellent dressmaking.

Housekeeping and household management.

Fifteen homes were clean and orderly, and the others were fairly well kept. In one case the secretary had done patient work in trying to raise the standards of housekeeping, which were originally very low, and the record showed that there had been considerable improvement. The income was apparently well managed in almost all cases. Most of the families bought supplies carefully and in fairly large amounts, stored food supplies for the winter, and canned and preserved vegetables and fruits at home. Clothing was kept well mended, and much of it was made at home.

Illustrations of homes visited.

The homes described below illustrate the living conditions observed.

The U family of six lived in an old two-story frame cottage which had a rather ill-kept exterior. Within, the house had a comfortable and homelike atmosphere. The sitting room with its well-worn chairs and carpet and a parlor organ looked invitingly sociable. In the roomy kitchen stood a dining table big enough for the whole family, and the necessary kitchen equipment was in fair condition. The latter included an ice-box, although Mrs. U said that she could not afford ice except in the hottest weather. Of the three bedrooms with clean bare floors and a double bed each, one was for the older girls, one for the mother with the youngest child, and one for the boys. Sheets and pillow cases were clean, and on the closet shelves were enough warm covers for the winter. Each member of the family had a special space in the closets and clothespresses for his own clothing. The boys were playing barefooted in the yard, but the day was warm.

Mrs. U was becoming discouraged, however. Her income was partly dependent upon the wages of the 17-year-old boy, who had been irregularly employed. She was in debt to the grocer, owed a \$5 dentist's bill, and in endeavoring to keep within her income had cut the daily supply of milk from 3 quarts to 1 quart. The family were still having meat every day, and vegetables almost every day, but very little fruit was used.

The family took a daily paper and a weekly church paper. In ordinary times they went occasionally to picture shows, but had not been recently. The boys had a good play space all around and were planning to go swimming that afternoon in the river near by.

The estimated budget for this family was \$94.62, of which Mrs. U could earn \$10 at home laundry work and her son \$35 at the factory when there was work. The aid of \$50 a month brought the income up to the budget, and made adequate living standards possible except in times of unemployment.

The home of the Y family—a mother, three children, and a man relative—was an attractive frame cottage set in a shaded yard affording space for a small garden. The cottage contained a sitting room, dining room, kitchen, and four bedrooms, all adequately and pleasantly furnished, and heated by two stoves. Everything about the place was in good repair and well kept. Mother and children were neatly clothed. The food appeared to be adequate; it included 2½ quarts of milk, vegetables daily from the garden, fruit on most days, and meat usually once a day. There was a chicken house in the back yard, and the two or three eggs laid daily were being used by the family.

The estimated budget for this family of five and their actual expenses were as follows:

Total expenses.....	\$106.30	Total income.....	\$104.30
Rent.....	15.00	Mothers' aid fund.....	40.00
Food.....	54.35	Payment from a fraternal order.....	21.65
Clothing.....	17.55	Boarder.....	34.65
Fuel and light.....	7.50	Mother's earnings.....	8.00
Insurance.....	1.40	Deficit.....	2.00
Car fare and sundries.....	10.50		

The small deficit was easily made up by the produce from the garden.

Sixteen of the 19 homes were cottages, similar to the two already described. In most instances, at least a small garden went with the cottage. In one of these gardens the winter as well as the summer vegetables used by the family were raised.

Of the families who were living in flats the V family of six will serve as an example. In this flat was a clean and adequately equipped kitchen with a gas range and an electric iron. The heating stove was

located in the combination dining and sitting room, which contained a substantial dining table, a sideboard, and chairs. Each of the remaining three rooms contained a bed. Inasmuch as all the children except the baby were girls the three rooms and their equipment furnished adequate sleeping arrangements. Mrs. V complained of the lack of warm coverings for the beds. The sheets were made of flour sacks, and were fresh and clean.

The food appeared to be fairly adequate—2 quarts of milk daily, meat three times a week, and fresh vegetables every day. Mrs. V, an Italian by birth, made her own macaroni and tomato paste.

For recreation the family went occasionally to picture shows and had picnics in the park. The Sunday paper was the only reading matter in the home.

The clothing was made at home, and both mother and children were neatly dressed.

WESTCHESTER COUNTY, N. Y.

Westchester County, lying just north of the city of New York, had in 1920 a population of 344,436. In the southern part it is largely urban except for country residences of people of means. Its larger centers of population are within easy reach of New York City, where many of the residents work. There are good connections by trolley and excellent suburban train service to most parts of the county, so that it is to a considerable extent a residence suburb of New York. It has, however, industries of its own of considerable size, and each of the larger cities has a number of manufacturing plants.

According to the Federal Census of 1920 the populations of the largest cities were: Yonkers, 100,176; Mount Vernon, 42,726; New Rochelle, 36,213; White Plains, 21,031. In addition, there were eight incorporated villages with populations ranging from 5,000 to 17,000. The county's foreign-born white population was 80,005, or 23 per cent of the total. Of these, 28 per cent were from Italy, 16 per cent from Ireland, 9 per cent from Germany, 8 per cent from Russia, 7 per cent from England, 6 per cent from Austria, and 5 per cent from Poland. The remaining 21 per cent came from Hungary, Scotland, Canada, and many other countries.

ADMINISTRATION.

At the time of the passage of the New York State law of 1915⁴⁹ establishing county boards of child welfare with power to grant and administer allowances to mothers, Westchester County was already granting mothers' allowances through the office of the superintendent of the poor under a ruling of the county board of supervisors based on a special interpretation of the New York State poor law. This plan was working to the satisfaction of the board of supervisors, and they made no appropriation to the board of child welfare appointed for Westchester County under the State law, but continued appropriations for mothers' allowances under their former ruling. In 1916 a special law, known as the commissionership act,⁵⁰ was passed relating to Westchester County.

⁴⁹ This act abolished the old office of the superintendent of the poor and created in its place a new office, that of county commissioner of charities and corrections, later called county commissioner of public welfare.⁵¹

⁴⁹ Laws of New York, 1915, ch. 228.

⁵⁰ Laws of New York, 1916, ch. 242.

⁵¹ County Organization for Child Care and Protection, p. 123, U. S. Department of Labor, Children's Bureau, Publication No. 107, Washington, 1922.

An amendment⁵² passed in 1921 places in the commissioner's hands all the duties of a county board of child welfare empowered to administer allowances to mothers. He has power to make such arrangement for the care of needy children as may be authorized by the county board of supervisors, but for those who are chargeable to any city or town no expense may be incurred without the consent of the local overseer of the poor.

Westchester is the only county in New York State granting allowances under a county commissioner. In Dutchess and Suffolk Counties, for which also the State legislature has passed special acts covering this type of assistance, the administration is in charge of unpaid county boards.

The county department of child welfare.

The department of child welfare is one of the six departments under the commissioner of public welfare. The families of mothers with dependent children receiving aid from the county are charges of this department, as are also all children living outside their own homes who are dependent upon the public for support, whether they have become so because of parental cruelty or neglect, their own need for hospital treatment or institutional training, or have been committed as destitute under the poor law. Since the department aims to remedy the conditions which result in children becoming dependent, its agents deal with all types of family problems in the rural parts of the county where there are few other agencies at work. In the cities, where social service is well organized, problems which are not definitely its responsibility are referred to the proper agencies. The fundamental purpose of the department is to preserve family life, and if aid can make the home a suitable one, that aid is given. Boarding homes are found for children who are physically and mentally fit for home life but have neither parents nor relatives able to make a home for them.

One of the outstanding features in the work of Westchester County is that the same agency cares for needy children, whether they are with their own mothers or away from them. This has the advantage of making possible the transfer of a child, without change of guardianship, from an institution or boarding home to his own home, or vice versa, as may be thought best for its welfare. The family is thus saved from the possibility of neglect through the lack of cooperation of different agencies, and from being transferred from the care of one worker to another with every change in conditions. There is uninterrupted opportunity for carrying out plans for family welfare, which is no doubt partly responsible for the high grade of case work done in the department.

⁵² Laws of New York, 1921, ch. 457.

In 1920, the department dealt with 2,498 families, of which 334 received mothers' allowances.

Distribution of work.⁵³

The department had a staff of 40 workers—a director, 3 assistant directors, a supervisor of district work, a supervisor of boarding homes, 16 field and district agents, 8 members of the clinic staff, 6 stenographers, a clerk, a bookkeeper, and 2 secretaries. Of these workers 17 were supported from county funds, and the other 23 by private funds. The Westchester county children's committee paid the salaries and expenses of 6 workers, and private individuals donated the funds for the remaining 17. In this connection it is interesting to note that while the county was willing to pay for 11 of the 16 field agents it furnished but 2 of the 6 stenographers, 1 of the 2 secretaries, and no filing clerk. This is in line with the reluctance, noticeable everywhere, to give adequate office assistance to the case workers or to recognize such service as a necessary part of the program.

The county was divided into districts, and nine district offices were maintained in addition to the central office in White Plains. Yonkers had four agents and a stenographer, three other districts had two agents each, and the remaining districts had one agent each. Except in Yonkers stenographic service was furnished from the central office to all the district offices. This was only occasional service, and each agent did much of her own typing.

Equipment of the workers.

The superintendent of district work gave full time at the central office to the direction of the work with families who received mothers' allowances. She was an experienced director of case work, was a college graduate, and had had additional training at a school of social work. Of the 14 agents doing work with families receiving aid, 9 were college and 4 were high-school graduates, while 1 was also a graduate of a school of social work, and 8 had received training in such a school. Four of the agents had had previous social-service experience of from one to five years in organizations doing case work; 9 of the 10 who had had no such previous experience had been with the department of child welfare of Westchester County for similar periods.

Records.

The records kept were similar to those in use by the private case-work organizations affiliated with the American Association for Family Work. Duplicates of the most important parts of the records were kept at the central office for the use of the supervisors of district work and boarding homes.

⁵³ County Organization for Child Care and Protection, p. 125. U. S. Department of Labor, Children's Bureau Publication No. 107.

Children eligible for aid, and amount of grant.

There were no restrictions on the county board of supervisors as to the types of cases that might be considered eligible, or as to the amount of aid that might be granted to the mothers of dependent children. At various times the board had made rulings to govern the work. To enable a mother with dependent children to care for them in her own home, the commissioner, under these rulings and at his discretion, and with the written consent of the local official, could grant her an allowance, provided she had a poor-law settlement in the county, that she could not maintain her home without public assistance, and that the children would be better off with her than in an institution.

The department of child welfare had worked out for itself certain policies which further restricted the list of families eligible to mothers' allowances. The mother must be a widow or have a husband incapacitated through mental or physical disability or by imprisonment from supporting his family. She might have equity in property, provided the expense of carrying it was no more than reasonable rent would be. The character of the home and of the mother had to be such that it would be for the best interests of the child to be kept in his own home. Children were always left with the mother whenever she was able, with assistance, to give them adequate care.

In 1916 the amount of aid that might be granted was fixed by the board at \$3 per week per child. This was increased at various times, and since April, 1920, the limit has been \$4.50 per week per child. No rigid limitation has been set on the total amount to be used for the purpose, and it has been possible to care for all the families found eligible.

Procedure in granting aid.

The application for aid might be made to anyone connected with the department. The mother filled out the proper form and made affidavit to the statements. The agent of the district in which she lived made an investigation which covered the verification of these facts, the social and health history of the family, and its economic condition. She then forwarded a written report, including a recommendation, to the central office. This was reviewed by the superintendent of district work and by one of the assistant directors. No decision was reached without the concurrence of at least three persons who had gone over the facts independently. If they reached the same decision, the director approved it; if there was a difference of opinion, the case was reviewed by a fourth member of the executive staff, and a conference of the different workers was held.

If aid was recommended, it was necessary to secure the signed consent of the supervisor of the town or commissioner of charities of the city in which the family had established a poor-law settlement; in the cases of families not long enough in one place to have acquired such a settlement the charge was upon the county.

In determining the amount of an allowance an estimated budget of household expenses was computed. Estimates of food costs made by the food committee of the New York Nutrition Council were used. Cost of clothing was computed from the estimates given in the Chicago standard budget. Other items of the budget were determined by local conditions.

THE FAMILIES AIDED.

Children benefiting by grants.

In August, 1921, there were 283 families in which 933 dependent children were being aided; there was a total of 1,039 children reported in the homes in these families, 106 of them being ineligible for aid. The largest number of families were those having two, three, and four children receiving aid as shown in the following list:

Number of children aided in family.	Number of families.
Total.....	283
One.....	5
Two.....	82
Three.....	88
Four.....	58
Five.....	37
Six.....	10
Seven.....	1
Eight.....	2

The ages of the 933 children who were receiving aid were as follows:

Ages.	Number of children.
Total.....	933
Under 4 years.....	102
4-5 years.....	108
6-7 years.....	135
8-9 years.....	175
10-11 years.....	170
12-13 years.....	159
14-15 years.....	81
16-17 years.....	3

Causes of dependency.

The death of the father was the cause of dependency in nearly 90 per cent of the families. The causes of dependency are listed as follows:

Cause of dependency.	Number of families.
Total.....	283
Father dead.....	251
Father incapacitated.....	20
Tuberculosis.....	8
Insanity.....	10
Other.....	2
Father deserting.....	9
Father imprisoned.....	2
Father separated.....	1

Residence and nativity of the mothers.

Of the 283 mothers, 177 were living in cities, 91 in incorporated villages, and 15 in rural sections. Of those residing in cities 122 lived in Yonkers, 22 in Mount Vernon, 17 in White Plains, and 16 in New Rochelle. Compared with the population, a larger proportion of the mothers were being aided in Yonkers than in the other cities.

Three-fifths of the mothers were foreign-born, and they were of 15 nationalities. The largest number (59) came from Italy, Ireland was represented by 40, Austria by 20, Russia by 12, Poland by 9, and England by 7; Hungary, Scotland, Czechoslovakia, Germany, France, Canada, Finland, Norway, and Sweden were each represented by from 1 to 4 mothers. Eight of the 113 native-born mothers were negroes; the nativity of 4 of the mothers was not reported.

ASSISTANCE GIVEN.**Allowances.**

Allowances amounting to \$123,871.21 were paid during 1920 to 334 families. The amount spent in August, 1921, was \$12,361, distributed as follows:

Monthly allowance.	Number of families.
Total.....	283
Less than \$15.....	12
\$15-\$19.....	12
\$20-\$24.....	24
\$25-\$29.....	27
\$30-\$34.....	14
\$35-\$39.....	45
\$40-\$44.....	24
\$45-\$49.....	11
\$50-\$54.....	52
\$55-\$59.....	9
\$60-\$64.....	6

Monthly allowance.	Number of families.
\$65-\$69.....	4
\$70-\$74.....	26
\$75-\$79.....	2
\$80-\$84.....	4
\$85-\$89.....	2
\$90-\$94.....	6
\$95-\$99.....	2
\$100.....	1

Service to the families receiving aid.

Visits of the agents to the families in their care were regular and friendly. The rule of the department was that each family should be seen in its own home once a month, or oftener. If the case required special attention the visits were more frequent—sometimes several in one week.

A total of 247 families had been receiving aid for at least six months preceding August 1, 1921; the number of home visits paid during the six months was recorded for 246 of these families, as follows:

Home visits recorded.	Number of families.
Total.....	246
Less than three.....	8
Three.....	14
Four.....	25
Five.....	23
Six.....	94
More than six.....	78
Not reported.....	4

One family had been visited 27 times, and 2 other families 20 times; 17 families had each received 12 home visits, an average of twice a month for the six months' period. In addition, some of the mothers visited the office frequently; in two cases where the families had received only rare home visits the mother was seen at the office three or more times every month.

The school records of the children were watched with interest. A report blank was used for some children but was not always required. For children showing special promise private funds were sometimes raised in order to keep them in school, after the mothers' allowance fund could no longer be used. The department of child welfare had ruled not to use public funds to keep children in school after they had attained 15 years of age if they were eligible for work permits. Therefore, all expenses for children 15 and 16 years of age who were kept in school had to be paid through private funds. For a child more than 16 years old it was necessary to raise from private funds not only the child's expenses but also a contribution to the support

of the family equal to the amount in excess of his own maintenance which he would probably earn if he were working.

The health of the mothers and children was carefully looked after. The county has a number of good clinics of its own, and to supplement these the free clinics in New York City were used.

THE CLINIC OF THE DEPARTMENT OF CHILD WELFARE.

The clinic of the department of child welfare gives both mental and physical examinations. The close cooperation between the clinic and the social-service work placed all the valuable material collected by the clinic at the service of the agents in their case work. A full copy of the findings, both physical and mental, was sent to the social-service division and kept on file there for convenient consultation.

Once a week a case conference was held, at which were present for each case to be considered the district agent in whose territory the case had arisen, the clinic's field worker who had been in contact with it, the director or one of the assistant directors of the department of child welfare, the superintendent of district work, and the psychiatrist of the clinic. At these conferences the recommendations for treatment were agreed upon.

Weighing and measuring tests were given by the physician of the clinic early in 1921 to all the children (910) in mothers' allowance families. Those receiving institutional care and those in boarding homes were also examined. In grading the children's physical condition, not only height and weight were noted but also general appearance, condition of the skin and the subcutaneous tissue, muscular tone and development, color of the mucous membranes, facial expression, activity, voice, and general reactions.

A comparison of the findings in the cases of the 910 children in the mothers' allowance group with findings in the cases of 751 children cared for in institutions and 71 living in boarding homes, all tested at approximately the same time, may be made from Table XI.⁴⁴ According to this table 86.4 per cent of the children in the mothers' allowance group were in satisfactory condition as to nutrition, while 13.6 per cent needed supervision of diet and manner of living or medical attention. The director of the child-welfare department pointed out that the children sent to boarding homes were selected because they needed individual attention, and that they may have started on a lower physical plane than the children in the mothers' allowance group.

⁴⁴ Data from a typewritten report furnished by Dr. Elizabeth I. Adamson, clinic, department of child welfare, Westchester County, N. Y.

TABLE XI.—*Physical condition of dependent children, by groups; children for whom allowances were granted, children in institutions, and children in boarding homes.*

Group.	Total children examined.		Per cent in specified physical condition.			
			Excel- lent.	Good.	Poor.	Very poor.
	Number.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Mothers' allowance.....	910	100.0	34.4	52.0	12.1	1.5
Institutions.....	751	100.0	31.4	52.4	15.5	0.7
Boarding homes.....	71	100.0	21.1	64.9	12.6	1.4

STANDARDS OF LIVING.⁵⁶**Characteristics of the families visited.**

Most of the 25 families selected for special study were chosen from the list of those granted aid in 1919 and still on the list in August, 1921; a few cases of longer or shorter duration were included for geographical reasons.⁵⁷ Eleven families had been receiving aid for between one and two years, 10 for between two and three years, and the remaining 4 families for periods ranging from three to five years. In 19 families there were children too young to go to school; in 3 there were older children at work, who were helping to support the family. The families ranged in size from two to seven children. The nativity distribution was as follows: Ten of the mothers had been born in the United States (3 of them were negroes), 6 were Italians, 3 Hungarians, and 2 Irish; Austria, England, Germany, and Poland were each represented by 1 mother.

All except two of the mothers visited spoke enough English to enable them to carry on ordinary conversation about household affairs.

Housing.

Of the 25 homes seen 17 were in flats or two-family houses, all well lighted and ventilated and in reasonably good repair. Eight were in cottages, 5 being on the outskirts of the cities or villages, where there was plenty of play space to be shared with the other children of the neighborhood. Three of the homes were in the open country.

One of the country cottages was a substantial five-room frame cottage, occupied by the I family, consisting of an Irish-American mother and her six children. The sitting room, kitchen, and one bedroom were on the first floor, and two bedrooms were in the attic. The house had been erected by the young father and mother with their own hands. After the father's sudden death, the mother had

⁵⁶ Data were secured through home visits by the writer.

⁵⁷ For general method of selection of families, see p. 1.

gone on with the work of making the home. She "just loved cement" and had dug and cemented a small square cistern. Before this was completed all the water had to be carried from a spring about 200 yards back of the house. She had also laid a cement walk through the deep front yard to the road, and had made a window box, which was filled with bright flowers, for the attic window above the small front porch. Fruit trees and grapevines grew in the back yard, and vines covered the fence dividing the I's yard from their neighbor's. It was an attractive home affording healthful conditions for growing children.

Westchester County, with the Hudson River on the west, is famous for the beauty of its scenery. On one of the narrow roads leading through a remote part of the county stood a tiny cottage surrounded by woods and hills. It was old, but comfortable and homelike, with three rooms and an attic. The house was large enough for the comfort of the mother and her two small boys who lived in it, and there were woods on all sides for the children to range through with their playmates from the house around the next curve in the road.

Mrs. B, a Hungarian mother, and her three small boys, together with a baby which she had taken to board, lived in a four-room flat in a house built to accommodate four families. Each room had one or more outside windows, the family had the exclusive use of a clean toilet in the hall, the kitchen had a good sink, and the walls and floors were in good repair. In the absence of a yard a vacant lot near by afforded play space. The street was quiet and built up, though not very closely, with similar houses occupied by working people. The open country was not far away, and at the time of the writer's call the older boy had gone to gather wild cherries for jelly.

The D family, an Italian mother and her five children, lived in a second-story flat of a four-family frame house, which was old and in only a fair state of repair. They had three large rooms, one of which had two outside windows, each of the others having one. A toilet in the hall was shared with another family. The large kitchen served also as the sitting room, and the other rooms were used for sleeping. The oldest child was a girl of 13. The street was narrow, and rather closely built up with similar houses.

Fifteen of the 25 homes seen contained four or more rooms; 6 had three rooms, and 4 had but two. In five instances there was not room enough for the comfort of the family. One mother and her four children were living in two rooms; another mother and her six children were living in three rooms. Three other families, in each of which were three children, were crowded, though less seriously, in three-room dwellings. The homes in the cities and incorporated villages had sinks with running water, but only four of the homes had bathrooms.

Household equipment.

Nineteen homes had a sitting room, heated by a coal stove in winter and furnished with at least a few comfortable chairs and a table and a rug or carpet. In several instances the sitting room had additional furniture—pictures, bookshelves, a victrola, or a piano. Six families who had no separate sitting room used either the kitchen or a bedroom as a sitting room.

In 18 of the 25 homes there was at least one bed for each two persons in the family, with covers enough for warmth and sufficient linen for cleanliness. Seven families had an insufficient number of beds; in 4 of these cases the mother had two children sleeping with her, and in 2 others three children slept in one bed. Four families were not adequately provided with covers or linen.

All the homes except one, had enough utensils for cooking and serving food in a simple way, and for cleaning and laundry work. In many of the homes the previous standard of living had been high, and these households were well equipped. In 20 instances there was either an ice box or a cool cellar. Cooking was by gas in summer; the winter cooking was done on a coal range or stove.

Food.

The supply of milk was usually adequate. No family had less than 1 quart daily, while 19 families had as much as a pint for each child per day. Most of the families with the lower milk consumption were Italians. Vegetables were mentioned as a part of the daily diet by almost all the mothers. Fruit was used less often, but in a number of cases it formed a part of the daily diet. Meat was customarily eaten from two to six times a week, and usually eggs and butter were in the dietary. The choice of foods showed that the agents had given some attention to the subject in their talks with the mothers.

One mother kept her menus for several weeks, and the following are samples taken from a week in August:

<i>Breakfast.</i>	<i>Lunch.</i>	<i>Supper.</i>
Cereal.	Hamburg steak.	Eggs.
Bread and butter.	String beans.	Peaches.
Coffee or cocoa.	Potatoes.	Bread and butter.
	Bread and butter.	Tea.
Cereal.	Chops.	Lettuce salad.
Toast.	Spinach.	Peaches.
Coffee or cocoa.	Baked potatoes.	Bread and butter.
	Rice pudding.	Tea.
Cereal.	Eggs.	Salmon.
Bread.	Green corn.	Bread and butter.
Coffee or milk.	Potatoes.	Tea.
	Bread and butter.	

Clothing.

The standard for clothing seemed to be almost uniformly good. The mothers visited at their work or in their homes were neatly dressed. Three mothers said they had bought almost nothing for themselves since receiving aid. In all except two cases the children seen were suitably dressed, in whole and reasonably clean clothing. In one family, the children's clothing was old and shabby looking; in another it was unclean and unmended. Twenty homes contained sewing machines, and almost all the mothers did a considerably amount of sewing for the family.

Housekeeping and household management.

The households seemed to be carefully managed and the incomes expended advantageously. Canning, jelly-making, and storing vegetables for the winter were customary with many of the women. The buying was done with forethought in many cases. Several mothers bought flour by the barrel and potatoes by the hundred-weight. Very little indebtedness had been incurred, and the few debts were usually for a doctor's or a dentist's service.

Of the 25 homes 23 were clean and orderly, 1 was fairly well kept, and 1 was poorly kept.

Education and recreation.

Children of school age were all in school. Some families had no reading matter in the home; four took a weekly newspaper, four a daily paper, two had magazines, six spoke of getting books from the public library, and one mother borrowed things to read from her employer. Most of the mothers said that they went occasionally to picture shows with the children though one whose children went weekly said she would hate to spend money to go herself. It was a custom in most families to go picnicking in the parks or at the shore. A good many families were within reach of the beach where bathing was possible. There seemed to be no reason why all the children should not have plenty of outdoor play.

Work of the mothers.

All but 5 of the 25 mothers did remunerative work. Eleven did laundering, sewing, or beadwork at home; 9 worked away from home. One mother was a full-time saleswoman; during her absence her 15-year-old daughter looked after the children of 11 and 13 years. Two mothers were away from home for three days each week. In one case the grandmother cared for the children; in the other the mother took the younger children (3 and 4 years of age) with her to her day's work, while a neighbor looked after the older children (8 and 10 years of age) after their return from school. The 6 other mothers worked away from home one or two days a week or irregularly, and at such times they made apparently satisfactory arrangements for the care of their children.

MONTGOMERY COUNTY, N. Y.

Montgomery County had in 1920 a population of 57,928. A large proportion of the inhabitants—about four-fifths—were living in Amsterdam (33,524), Fort Plain (2,747), and eight incorporated villages (containing in all 9,603). The distinctly urban population formed five-eighths of the total population of the county. The larger towns were manufacturing centers, and although there was some farming in the county most of the population followed industrial pursuits.

The foreign-born white population numbered 12,357, or 21 per cent of the total. Of these, 26.5 per cent were of Polish nativity, 20 per cent of Italian, 14 per cent were German, and 9.5 per cent Lithuanian.

ADMINISTRATION.

In this county aid was given to mothers with dependent children under the State mothers' allowance law passed in 1915,⁵⁸ which authorizes the creation for this purpose of county boards of child welfare.

State supervision.

The State board of charities has general supervision over the county boards of child welfare, and may after investigation revoke allowances or make orders in regard to the work of the local boards. The county boards made reports to the State board. The State board⁵⁹ has acted as a bureau of advice, information, and standardization for the county boards. It supplied such materials for their work as the forms for application for mothers' aid and the schedules for estimating family budgets. It held regional conferences in different parts of the State, to which all the social workers within reach were invited for the discussion of matters relating to their duties. Since 1919 a supervisor of county boards of child welfare has been a member of the staff of the State board. This supervisor had an assistant who visited a county for several days at a time, going over the records of the local agent, calling on some of the

⁵⁸ Laws of New York, 1915, ch. 228 (amended by 1916, ch. 504; 1917, ch. 551; 1919, ch. 373; 1920, ch. 700 and ch. 759).

⁵⁹ Proceedings of Conference on Mothers' Pensions, p. 27. U. S. Department of Labor, Children's Bureau Publication No. 169.

families with her, advising her in a general way about the local committees, and occasionally meeting with the latter. The supervisor of county boards had met once during the past year with the Montgomery County board, and her assistant had spent some time with the local agent.

The county board of child welfare.

The county board of child welfare consisted of seven members who were appointed by the county judge, each for a term of six years, and served without pay. Three members were women; the law provides that at least two must be women. The county superintendent of the poor was ex officio a member. The board met once a month and passed upon each application for a mother's allowance. No allowance could be granted for longer than six months without renewal, so that each case had to be reviewed before the board every six months or at shorter intervals. The members of the board were men and women of high standing in the county and were deeply interested in the work. The women members visited the families receiving aid and took a personal interest in their welfare. The board sent a yearly report of its work to the State board of charities on a blank provided for the purpose.

The secretary of the board, who had been trained in a school of social work, had held the position for two years. Since she also acted as the agent of the Montgomery County Committee of the New York State Charities Aid Association, she had charge as well of the work with the dependent children of the county other than those whose mothers drew allowances from the board of child welfare. With one office assistant she did all the social work among families and children in the county. In addition she devoted considerable time to community plans for the improvement of social conditions. About a third of her time could be given to families where the mothers received allowances. In August, 1921, 18 mothers in the county were receiving allowances from the board of child welfare.

Records.

The case record for each family consisted of the application blank, all correspondence relating to the case, and history sheets on which records of visits and interviews were entered. The records contained well-organized material. The agent had used the plan of summarizing the work covering several months' time, omitting unimportant details but giving the general results and the outstanding conditions.

Children eligible for aid, and amount of grant.

Any mother might be granted an allowance for the support of her children born in the United States if she was a widow, or her husband was in a State hospital for the insane, or was confined in a

State prison under a sentence of five years or more, provided that such mother had been a resident of the county for two years or more immediately preceding the application for an allowance and was a citizen of the United States, or her husband had been a resident of the State for two years preceding his death or commitment and had declared his intention of becoming a citizen of the United States within five years immediately preceding his death or commitment, provided that she was a suitable person to bring up her own children, and that the aid was necessary to enable her to avoid placing them in an institution for care.⁶⁰

The amount of assistance was limited by the law to the cost of maintaining a child in an institution—at the time of the study, \$5 a week.

Procedure in granting aid.

The mother filled out the application blank provided by the State board. It was a very full, eight-page questionnaire. Five pages were for the statements of the applicant, to which she must make affidavit, covering date and place of birth for each member of the family, employment and wages—present and past—of all members employed, present and previous addresses, landlord and rental, property interests, indebtedness, insurance, and the names and addresses of relatives, physician, pastor, and three references. Then the investigator recorded the manner in which citizenship, residence, marriage, births of children, and death or incapacity of the husband were verified, and also the facts about insurance, funeral expenses, and other matters connected with property interests. She made a social investigation which included interviews with close relatives (parents, brothers, sisters) if they lived in the county, or direct correspondence with them if they lived outside it. The industrial history of both the mother and the father were ascertained, as well as their relations to their neighbors and acquaintances. The former standard of living was determined, and the physical condition of the whole family.

When completely filled out with reliable statements the questionnaire afforded a fairly complete summary of the family's economic and social conditions and gave a good idea of its history.

The family budget was estimated according to the schedule furnished by the State board of charities. This was presented to the board, and the difference between it and the ascertained income determined the amount of the grant.

THE FAMILIES AIDED.

Children benefiting by grants.

Eighteen families with a total of 66 children in the home, 55 of whom were dependent, were receiving aid on August 1, 1921. The

⁶⁰ Laws of New York, 1915, ch. 228, sec. 153—1 and 3.

death of the father was the cause of dependency in all the cases. There were 8 families with three children each, 5 families with two children, 2 with four children each, 1 family had only one child, 1 had five, and 1 had seven children. The ages of the children for whom aid was granted were as follows:

Ages.	Number of children.
Total.....	55
Under 4 years.....	7
4-5 years.....	4
6-7 years.....	14
8-9 years.....	5
10-11 years.....	11
12-13 years.....	10
14-15 years.....	4

Residence and nativity of the mothers.

Twelve mothers lived in the two cities, four lived in incorporated villages, and only two were residents of distinctly rural places. Eleven mothers were native born, three were of German and two of Austrian birth, and the others had come from Canada and England.

ASSISTANCE GIVEN.

Allowances.

The monthly pay roll for August, 1921, was \$774. Two families received less than \$30, 2 others received \$35, 8 had pensions ranging from \$40 to \$45, and 6 received \$50 or over, as much as \$60 being granted in one instance.

Service to the families receiving aid.

The contact of the agent with the families was extremely friendly. It was apparent that they felt her interest in them and relied upon her as an adviser. She saw them at least once a month and usually oftener. Fourteen of the families had been receiving aid during the six months' period immediately prior to August 1, 1921. Of these families, one had received four home visits, and the others had received six or more. The number of visits of the mothers to the office was not recorded.

The health of each family was receiving intelligent care. A great deal of effort had been made in planning to give a crippled girl an opportunity to go to a hospital for observation and treatment under the best medical care. Another child who had had tuberculosis was receiving the most careful attention as to his food and sleeping arrangements. Dental work was being arranged for, and the children were encouraged to take care of their teeth. Diseased tonsils, adenoids, and other defects were being remedied.

The agent went over the expense accounts with the mothers and discussed household management and choice of foods on the basis

of these accounts. The board furnished blank books for keeping the accounts, and in many instances they had been faithfully kept. The books were arranged with headings, and with space enough to enter each item under the head to which it belonged. The items included:

Rent, taxes, repairs, insurance, interest on mortgage.....	
Groceries.....	
Meat and fish.....	
Milk and eggs.....	
Clothing and shoes.....	
Fuel and light.....	
Upkeep of house.....	
Doctor and medicine.....	
Carsfare, church, and recreation.....	
Schoolbooks and supplies.....	
Monthly income.....	

All children of school age were in school; their records were carefully looked after, and regular attendance and good work were encouraged. Arrangements were made to keep the children in school as long as it seemed really worth while. Suitable employment after leaving school was carefully considered, not only by the agent but by members of the board, who were frequently able to secure for the children positions which offered chances for development.

Work of the mothers.

Six of the 18 mothers were working, 2 of them at employments which took them away from the home. One worked full time in a factory, her three younger children, all in school, being cared for by a 15-year-old daughter. This mother was an excellent manager, and the factory was near her home. She wished to work full time, and since the care of the house and children appeared to be satisfactory the board of child welfare gave their consent. The other mother was away during two days every week; her children, all in school, were looked after by a neighbor until she returned.

STANDARDS OF LIVING.⁶¹

Characteristics of the families visited.

Accompanied by the county agent, the writer visited six homes. Two families had received aid for something over five years, one family for four years, and three families for two years. All the mothers spoke English; five had been born in the United States, and the sixth in Canada. One mother had but one child, two mothers had two, and the others had three, four, or five children. Not more than three children were given allowances in any one family, the other children in each case being beyond compulsory school age.

⁶¹ Data were secured through home visits by the writer.

Housing.

The housing in all cases permitted of healthy and morally wholesome living arrangements. Three families lived in cottages, each with its yard and garden space. In two cases the cottage was owned by the mother, and in the third by a relative of the mother's. Another house, although occupied by two families, had most of the advantages of a cottage; it was on the outskirts of the town, and had plenty of play space all around and a creek within easy reach. The two other families lived in well-lighted rooms in small flats, surrounded by plenty of play space. One of these had a large sunny porch, which the agent planned with the family to convert into a sleeping porch for a daughter who was recovering from tuberculosis. In no instance were the sleeping arrangements crowded.

Household equipment.

Each family had a sitting room or parlor containing the necessary furniture—a stove, comfortable chairs, table, and rug or carpet. One family had a piano. In two families the sitting room was used also for sleeping, but in each of these homes there was a dining room used also as a sitting room. In no family was it necessary for more than two persons to occupy one bed. All except one mother said that they had enough warm coverings for comfort in the winter. Two families needed more bed linen.

Equipment for cooking, laundry, and other household work was sufficient. Coal oil was used for summer cooking except in one new cottage that had both gas and electricity. The mother in this home had an electric iron, and the house was heated by a furnace. The other homes were heated by stoves and had a stove in the sitting room as well as one in the kitchen. Four homes had ice boxes; the others had cellars which helped in the preservation of food.

Food.

All the families took at least 1 quart of fresh milk daily, and four families had enough to supply each child with at least a pint. The mother of one family, whose supply was only 1 quart daily, claimed that her three children would not drink milk, although the agent had evidently tried hard to convince her that she should induce them to take it. In three families the children were having no coffee. All the mothers said that they were having vegetables daily. Fruit was used less generally, though one mother had it as a part of her daily dietary, and another used it frequently; the others reported only occasional use. Meat was eaten sparingly. Three families had it regularly only on Sundays, and occasionally at other times; the others ate meat from two to three times a week, and sometimes had fish. All except one family used breakfast cereal, and butter or butter substitute seemed to be used in sufficient amounts.

In five families the food was at least fairly well chosen; in the other family too little milk and fruit were used, and the children drank coffee. There was every indication that the agent had given careful instruction in diet to the mothers who needed it, and the family whose diet was least satisfactory showed some improvement over their original food habits. For instance, one of the children had been induced to give up coffee and to drink milk instead.

Clothing.

The clothing of all the families visited appeared to be adequate. The mothers wore neat wash dresses, and the children were suitably attired for play. The mothers said that they had enough warm winter clothes for their families. Most of the clothing had been made at home by the mothers, often from used garments that had been given them.

Housekeeping and household management.

In four homes the housekeeping standards of order and cleanliness were high, and in the two others they were fairly good. The expenditure of the income appeared to be reasonably wise in all cases, and excellent in three. Buying was carefully done. The agent encouraged garden making and the storing and preserving of food materials for winter use.

Education and recreation.

All children of school age were in school. By a special arrangement of the board of child welfare two children in one family were in high school. Three families had a daily paper and one a weekly newspaper; two had magazines. All the families had access to books through public libraries. All attended church, and the children of all but one family went to Sunday school.

Only two of the families seemed to make a regular practice of going to picture shows. Meetings connected with church and school formed the chief recreational activities of the other families.

Work of the mothers.

None of the mothers seen worked outside their homes; two mothers did home work, one of them boarding a child and the other doing laundry work.

APPENDIX.

TABLE 1.—Total amount of aid and average amount of grant per child, by locality.

Locality.	Number of children for whom aid was granted.	Total amount of aid.	Average amount per child.
Total.....	3,049	\$41,781.71	\$13.70
Boston, Mass.....	¹ 646	11,074.72	17.14
Denver, Colo.....	224	3,015.00	13.46
Haverhill, Mass.....	² 104	2,046.74	19.63
Hennepin County, Minn.....	654	7,440.25	11.38
Montgomery County, N. Y.....	55	774.00	14.07
Northampton County, Pa.....	120	1,230.00	10.17
St. Louis, Mo.....	313	3,850.00	12.30
Westchester County, N. Y.....	933	12,361.00	13.25

¹ Excludes 8 children for whom amount of aid was not reported.

² Excludes 4 children for whom amount of aid was not reported.

TABLE 2.—Monthly allowances of families receiving aid at time of study, by locality.

Monthly allowance.	Families in localities studied.										
	Total.		Denver, Colo.	Hennepin County, Minn.	Yellow Medicine County, Minn.	St. Louis, Mo.	Boston, Mass.	Haverhill, Mass.	Northampton County, Pa.	Westchester County, N. Y.	Montgomery County, N. Y.
	Number.	Per cent distribution.									
Total.....	942	100.0	73	207	9	94	195	33	30	283	18
Less than \$15.....	27	2.9	.....	12	1	3	.....	.....	.....	11	.....
\$15-\$19.....	40	4.2	.....	18	4	1	4	.....	1	12	.....
\$20-\$29.....	153	16.2	18	52	1	12	13	1	2	52	2
\$30-\$39.....	188	20.0	8	59	3	24	21	.....	11	60	2
\$40-\$49.....	161	17.1	22	29	.....	26	30	4	7	35	8
\$50-\$59.....	150	15.9	13	19	.....	14	26	9	5	59	5
\$60-\$69.....	109	11.6	9	10	.....	8	58	9	3	11	1
\$70-\$79.....	63	6.7	3	1	.....	5	21	4	1	28	.....
\$80-\$89.....	21	2.2	.....	2	.....	1	9	3	.....	6	.....
\$90-\$99.....	20	2.1	.....	5	.....	.....	6	1	.....	8	.....
\$100-\$110.....	7	0.7	.....	.....	.....	.....	5	1	.....	1	.....
Not reported.....	3	0.3	.....	.....	.....	.....	2	1	.....	.....	.....

TABLE 3.—Causes of dependency in families receiving aid at time of study, by locality.

Locality.	Families receiving aid.							
	Total.	Cause of dependency.						
		Death of father.	Insanity of father.	Illness and other incapacity of father.	Imprisonment of father.	Desertion.	Divorce.	Separation.
Total.....	942	700	46	136	15	41	3	1
Boston, Mass.....	195	97	6	71	5	16	.....	.....
Denver, Colo.....	73	62	3	.....	1	5	2	.....
Haverhill, Mass.....	33	25	2	4	1	1	.....	.....
Hennepin County, Minn.....	207	123	18	49	6	10	1	.....
Montgomery County, N. Y.....	18	18	.....	.....	.....	.....	.....	.....
Northampton County, Pa.....	30	28	1	1	.....	.....	.....	.....
St. Louis, Mo.....	94	87	6	1	.....	.....	.....	.....
Westchester County, N. Y.....	283	251	10	10	2	9	.....	1
Yellow Medicine County, Minn.....	9	9	.....	.....	.....	.....	.....	.....

TABLE 4.—Causes of death of fathers, as reported in case records.

Cause of death.	Fathers dead at time of application for aid.	Cause of death.	Fathers dead at time of application for aid.
Total.....	679	Apoplexy.....	6
Pneumonia.....	122	Blood poisoning.....	6
Influenza and pneumonia.....	20	Meningitis.....	6
Tuberculosis.....	128	Operation.....	6
Influenza.....	92	Asthma.....	4
Accident.....	63	"Intestinal trouble".....	4
"Heart trouble".....	46	Abscess.....	3
"Kidney trouble".....	34	Acute indigestion.....	3
Cancer.....	32	Peritonitis.....	3
Appendicitis.....	17	Veneral disease.....	3
Suicide.....	10	Diphtheria.....	2
"Complications of diseases".....	8	Dropsy.....	2
"Liver trouble".....	7	Gall stones.....	2
Paralysis.....	7	Lead poisoning.....	2
"Stomach trouble".....	7	Rheumatism.....	2
Typhoid fever.....	7	Other.....	25

TABLE 5.—Causes of incapacity of fathers.

Cause of incapacity.	Fathers incapacitated.	Cause of incapacity.	Fathers incapacitated.
Total.....	177	Asthma.....	1
Tuberculosis.....	90	Broken leg (never healed).....	1
Insanity.....	46	"Complication of diseases".....	1
Cancer.....	7	Epilepsy.....	1
"Kidney trouble".....	7	Gangrene (amputation of both legs).....	1
"Heart trouble".....	6	Influenza.....	1
Paralysis.....	4	Locomotor ataxia.....	1
Rheumatism.....	4	Operation.....	1
Accident, crushed.....	1	Spinal trouble.....	1
Anemia, secondary.....	1	Uremia.....	1
		Syphilis.....	1

TABLE 6.—Interval between death of father and application for aid.

Interval between death and application for aid.	Fathers dead at time of application for aid.	Interval between death and application for aid.	Fathers dead at time of application for aid.
Total.....	700	11 months, less than 1 year.....	12
Less than 1 month.....	147	1 year, less than 2.....	96
1 month, less than 2.....	78	2 years, less than 3.....	47
2 months, less than 3.....	47	3 years, less than 4.....	42
3 months, less than 4.....	43	4 years, less than 5.....	10
4 months, less than 5.....	22	5 years, less than 6.....	19
5 months, less than 6.....	23	6 years, less than 7.....	9
6 months, less than 7.....	24	7 years, less than 8.....	9
7 months, less than 8.....	17	8 years, less than 9.....	1
8 months, less than 9.....	9	9 years, less than 10.....	2
9 months, less than 10.....	14	11 years, less than 12.....	1
10 months, less than 11.....	6	Not reported.....	23

TABLE 7.—*Interval between incapacity of father and application for aid.*

Interval between incapacity and application for aid.	Fathers incapacitated.	Interval between incapacity and application for aid.	Fathers incapacitated.
Total	182	8 months, less than 9	1
Less than 1 month	22	9 months, less than 10	1
1 month, less than 2	18	11 months, less than 1 year	1
2 months, less than 3	8	1 year, less than 2	8
3 months, less than 4	2	2 years, less than 3	2
4 months, less than 5	3	3 years, less than 4	4
5 months, less than 6	3	4 years, less than 5	2
6 months, less than 7	1	8 years, less than 9	1
7 months, less than 8	3	Not reported	102

TABLE 8.—*Interval between desertion of father and application for aid.*

Interval between desertion and application for aid.	Fathers who deserted.	Interval between desertion and application for aid.	Fathers who deserted.
Total	45	1 year, less than 2	11
4 months, less than 5	1	2 years, less than 3	4
6 months, less than 7	1	3 years, less than 4	6
7 months, less than 8	1	4 years, less than 5	1
9 months, less than 10	3	5 years, less than 6	1
10 months, less than 11	1	7 years, less than 8	2
11 months, less than 12	4	8 years, less than 9	1
		Not reported	8

¹ One divorced at date of application for allowance, deserted earlier.

² Deserted after killing a man.

³ One divorced at date of application for allowance, deserted earlier; in prison, after allowance granted, for not paying alimony.

⁴ Mother left father because of his cruel treatment of her.

⁵ One divorced after allowance granted.

SCHEDULES USED IN STUDY.

U. S. Department of Labor,
Children's Bureau.

No.....
Locality.....
Date.....
Source.....

ADMINISTRATION OF MOTHERS' PENSIONS.

Date of application..... Date pension granted.....
 Status of father..... Date..... Cause of death.....
 Father's last occupation..... Wages.....
 Nationality: Mother..... Father.....
 Children:

Sex.	Age 1.	Date of birth.	Age 2.	Grade.	Left school.		Occupation.	Wages.	At home.
					Grade.	Age.			
1.....
2.....
3.....
4.....
5.....

Rent..... No. of rooms..... Total No. occupants.....
 Value of property owned.....
 Occupation and earnings of mother.....
 Others living with family.....
 Income other than pension: Family wages..... Other..... Total.....
 Sources of other income or aid.....
 Date of last budget estimated..... Total estimated budget.....
 Deficit..... Amount pension granted on basis of this budget.....
 Amount of present pension: Cash..... Other.....
 Total present monthly income (including pension).....
 No. of visits per month.....

J. S. Department of Labor,
Children's Bureau,
Washington, D. C.

Name

MOTHERS' PENSION FAMILIES.

STANDARDS OF LIVING.

Surroundings:

Street: Quiet..... Car line.....
 Neighborhood: Good residence..... Poor residence..... Business.....
 Dangerous features.....
 Playground (supervised).....
 Character of House.....
 Yard.....

Rooms and furnishings:

Rooms: Sitting...Dining...No. bed rooms...Other rooms used for sleeping.....
 Adequacy of beds..... Bathing facilities.....
 Sitting-room furniture.....
 Sewing-machine..... Piano..... Ice-box..... Stoves.....
 Bed covering..... Household linens..... Dishes..... Cooking Utensils..

Food:

Milk—quarts... Coffee for children..... Vegetables..... Fruit.....
 Meat..... Eggs..... Cereals..... Home baking.....
 Buying: In small amounts..... In large amounts..... Buying well done.....
 Garden..... Chickens..... Cow.....

Clothing:

Well-clothed..... Insufficiently..... Extravagantly.....
 Home sewing.....

Recreation and education:

Church attendance..... Sunday School..... Daily paper.....
 Weekly paper.....
 Magazines..... Picture shows..... Clubs..... Classes.....

Housekeeping:

Clean..... Orderly..... Disorderly..... Dirty.....





DEC 3 1923

U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

CHILDREN'S BUREAU

GRACE ABBOTT, Chief

INFANT MORTALITY

RESULTS OF A FIELD STUDY IN BALTIMORE, MD.
BASED ON BIRTHS IN ONE YEAR

By

ANNA ROCHESTER



Bureau Publication No. 119



WASHINGTON
GOVERNMENT PRINTING OFFICE

1925



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DEPARTMENT OF LABOR

LETTER OF TRANSMITTAL.

UNITED STATES DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, February 21, 1922.

SIR: There is transmitted herewith a study of infant mortality in Baltimore, Md.

It is the eighth and in many respects the most important of the unique and valuable series of infant mortality studies which the Children's Bureau made while Julia C. Lathrop was its chief. Because Baltimore is the largest city studied by the bureau, the number of births is larger, and a more detailed comparison has been possible than in other studies.

Dr. Grace Meigs Crowder was medical adviser during this investigation; Estelle B. Hunter was in charge of the field work; Emma Duke and Dr. Robert M. Woodbury planned the statistical tabulation; and Anna Rochester organized the material and wrote the report. In the analysis, the "method of expected deaths" developed by Prof. Harald Westergaard was applied under the direction of Doctor Woodbury to isolate the effects of the several causal factors.

It is a pleasure to record that conditions have improved in Baltimore since the investigation was made. The city now has a bureau of child hygiene, and the opportunities for prenatal care have been increased; and, as everywhere, the corollary has been a downward trend in the infant mortality rate. The evidence which this report adds to those already made as to conditions which affect the mortality rate among infants under 1 year of age, will, it is believed, be of value to all communities that are at work on this problem.

Respectfully submitted.

GRACE ABBOTT, *Chief.*

HON. JAMES J. DAVIS,
Secretary of Labor.

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INFANT MORTALITY, BALTIMORE, MD.

INTRODUCTION.

Baltimore is the eighth city in which the Children's Bureau has made an intensive field study of infant mortality. Not only do the Baltimore findings strengthen conclusions indicated in the earlier studies, but they have also a unique significance because of the detailed analysis made possible by the large number of births included in the study and because Baltimore differs in certain ways from the seven other cities.

Baltimore is the largest of the cities studied by the bureau. The population, shown by the Federal census of 1910 to be 558,485, is estimated to have been 599,817 on July 1, 1915, the middle of the calendar year covered by the study.¹ It is the first city studied in which the negro population was large enough to permit analysis of the high infant mortality rate among negro babies. In fact, the composite of native white, foreign-born white, and negro elements in Baltimore was similar to that in the United States as a whole.

In the cities previously studied, some one industry predominated, but not so in Baltimore. It is not only a shipping center but also a manufacturing city producing a great variety of wares.

Baltimore is also the first city studied in which extensive infant-welfare work, including opportunity for prenatal instruction and supervision, had been carried on for several years. Hospital provision for maternity care was also relatively well developed.

In Baltimore the mortality was not markedly higher than the mortality in the birth-registration area of the United States. But this in turn is definitely higher than the mortality in certain other countries. Even when the negro births—which showed uniformly higher mortality than white births—are eliminated from consideration, the Baltimore infant mortality rate in 1916 was not only twice as high as the rate for New Zealand (and markedly higher than the rates for the cities of New Zealand) but also higher than the rates in a number of European and American cities, including London and New York. On the other hand, a number of American cities showed approximately the same mortality as Baltimore and others a higher mortality than Baltimore.²

In its population, the variety of its industries, and the rate of infant mortality prevailing, Baltimore may be regarded as a typical American city with a typical problem in relation to infant mortality.

¹ U. S. Bureau of the Census, Bulletin No. 133, p. 22.

² See Table 1, Appendix VII, p. 223.

METHOD AND PURPOSE OF THE STUDY.

The study is based primarily on the registered births (including stillbirths and miscarriages) occurring in Baltimore during the year 1915³ and the deaths among these infants within 12 months after birth (in 1915 or 1916). The information was secured in part from the birth certificates and death certificates on file with the Baltimore Department of Public Safety, subdepartment of health, and in larger measure from the mothers who were visited by women agents of the bureau as soon as possible after the first anniversary of the baby's birth.⁴ In addition, information was secured from the mothers about all their babies and the deaths (or stillbirths or miscarriages) among these earlier births.

The babies born in 1915 fall into two main groups—the 13,484 legitimate and the 1,124 illegitimate.⁵ As the study progressed, each of these two groups had to be further divided.

Among the legitimate it was found that the families of 1,466 could not be located in Baltimore or were known to have moved away; the families of 381 were omitted as nonresidents; and for 24 babies whose families were found, and who were residents of Baltimore, detailed information was not available. Such facts as are known about these 1,871 excluded births have been analyzed and are discussed in Appendix II.^{6a} Therefore the normal group of legitimate births whose home surroundings were studied in detail and whose infant mortality rate is given with precision includes 11,613, or 86 per cent, of the registered legitimate births.⁶

More difficult to trace were the 1,124 illegitimate births. Only 679, or 60.4 per cent of these could be located and information secured about their surroundings and care. Such items as were given on the birth certificates and the known deaths in Baltimore or elsewhere are, however, analyzed for the larger group of all illegitimate births. The material on illegitimate infants is presented in a special section of the report.

The infant mortality rate among the legitimate babies whose histories were traced throughout the year was 103.5 per 1,000 live births. The rates for the other groups were unsatisfactory, but the known deaths among the illegitimate babies indicate a rate about three times as high as the rate in the normal group.⁷

³ For discussion of birth registration in Baltimore, see Appendix I, p. 185.

⁴ The father, provided he was able and willing to give the information, might be interviewed if the mother was not at home or if it was otherwise inexpedient to see the mother; others (as custodians or relatives living with the baby's family) might be interviewed (1) when the parents were dead or it was impossible to see them; (2) when the relation of such persons to the family and their information were such that there was no question as to their knowledge of facts; and (3) when their reliability was otherwise unquestioned.

⁵ In addition there were 28 stillbirths or miscarriages whose legitimacy was not reported and for whom no information could be secured.

^{6a} See p. 180.

⁶ See Table 2, Appendix VII, p. 223.

⁷ See Table VII, p. 170. For mortality among excluded legitimate births, see Appendix II, p. 1-9. For mortality among illegitimate infants, see p. 186.

No rate is offered as exact for Baltimore as a whole.⁸ Even the rate for the group of families studied in detail can not be considered an exact rate for all legitimate babies in Baltimore. While all the nationalities living in Baltimore, all grades of economic status, and mothers working and not working for wages are represented in the large group on which the main body of the study is based, their distribution in the group may not be identical with their distribution in the families about which information was not secured.

But the study is directly related to the city. Certain items were noted about the houses in which the babies born in 1915 lived and civic conditions affecting their health. Families in which either mother or baby was away from Baltimore surroundings four months or more during the year were excluded from the detailed study, even when the facts about them were clear. The facts about earlier births or "maternal histories" are not, however, so directly related to Baltimore.

Many known social factors in infant mortality were present in Baltimore—poverty, gainful employment for married women, imperfect sanitation, room congestion, and artificial feeding of young babies. Whether these were more or less prevalent in Baltimore than elsewhere is a question outside the scope of the present study, the aim of which is, rather, to show how these factors, and others, were related to infant mortality among the Baltimore babies about whom detailed information was available.

Statements of nationality or color are uniformly based on the color or nationality (mother tongue) of the mother. For example, in the discussion of fathers' occupations and earnings, the fathers are sometimes referred to as native white, foreign-born white, Jewish, etc., to avoid constant repetition of some such cumbersome phrase as "fathers of babies born to native white mothers."⁹

In the distribution of certain factors—the percentage of "mothers" or "fathers" or "families" of whom one or another statement is made in the text—the presence of plural births is disregarded. It is assumed that the number of births and the number of mothers, etc., are identical. The actual error involved is slight, but it should be remembered that data are based, for example, not on "mothers employed" but on "births to mothers employed."

⁸ The relation of the rates given in this study to rates for the city as a whole is discussed in Appendix III, p. 193.

⁹ Intermarriage between white and colored is forbidden in Maryland. In the study of infant mortality in Waterbury, Conn., an analysis was made of the nationality of the mother in relation to that of the father. In 87 per cent (1,911 cases) of the total 2,197 cases, the nationality of the fathers was the same as that of the mothers. *Infant Mortality: Results of a Field Study in Waterbury, Conn., Based on Births in One Year*, by Estelle B. Hunter, Children's Bureau publication No. 29, p. 116.

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THE BABIES' SURROUNDINGS.

BALTIMORE.

In 1729 the inhabitants of Baltimore County addressed a petition to the general assembly for the erection of a town upon the Patapsco River. About 70 years later (in 1797) the town was incorporated as Baltimore City with a population of 20,000 persons. The settlement centered about the water front, and many houses of the shipbuilders, merchants, and sea captains of these early days still stand in the district east of the Fallsway. With the growth of the last century, the "old families" have moved away from the water front, wharves and warehouses have been extended, and the homes of the leaders in former days have passed to the immigrants of yesterday.

Commercially the water front has remained of primary importance to Baltimore. The city has spread far to the north and west of the original settlement, and freight yards and factories have carried business into other parts of the city, but the center of business life is still near the river. In the fourth ward, which lies at the head of the basin, just south and east of the physical center of the 30 square miles of Baltimore City,¹⁰ are the city hall and the customhouse, the newspapers, banks, and business offices, and, along the water front, docks, warehouses, and factories. East and south of the fourth ward docks and warehouses extend along the entire shore; and the irregular contour, especially marked in the southern districts, increases enormously the water front available to a comparatively small and compact territory.

But at the time of this study business did not monopolize the eight wards of the water front.¹¹ The more prosperous residents had moved to the north, but the poorest native white families and colonies of the foreign born remained. The negroes lived mainly in other sections of the city, but in the fourth ward and the twenty-second ward (directly south of the fourth) a considerable percentage of the births were colored. In the eight water-front wards were born more than one-third of the Baltimore babies of 1915.¹²

The foreign neighborhoods extended into two other wards—the eighteenth ward, just west of the fourth, and the fifth ward, just east of the fourth and north of the third. In these two small adja-

¹⁰ Before the annexation of additional territory on January 1, 1919.

¹¹ Wards 1, 2, 3, 4, 21, 22, 23, 24. For the tabulations on which following statements are based see Tables 3, 4, 5, 6, and 7, Appendix VII, pp. 228 to 229.

¹² "Baltimore" in this study refers to the 24 wards of Baltimore City as it was before the annexation of surrounding territory, January 1, 1919.

cent wards and the eight wards of the water front were more than two-thirds of the Baltimore births to foreign-born white mothers and all the foreign neighborhoods except the Bohemian colony near the Johns Hopkins Hospital. In these 10 wards, also, were nearly two-thirds (65.8 per cent) of the white babies whose fathers earned less than \$550 during the year after the birth in 1915.

Class.	Live births.		
	Baltimore City (24 wards).	The 10 wards ¹	
		Number.	Per cent.
Total.....	10,797	4,581	42.4
Foreign-born white mothers.....	2,753	1,899	69.0
White mothers, earnings of father under \$550.....	2,130	1,403	65.8

¹ Wards 1, 2, 3, 4, 5, 18, 21, 22, 23, and 24.

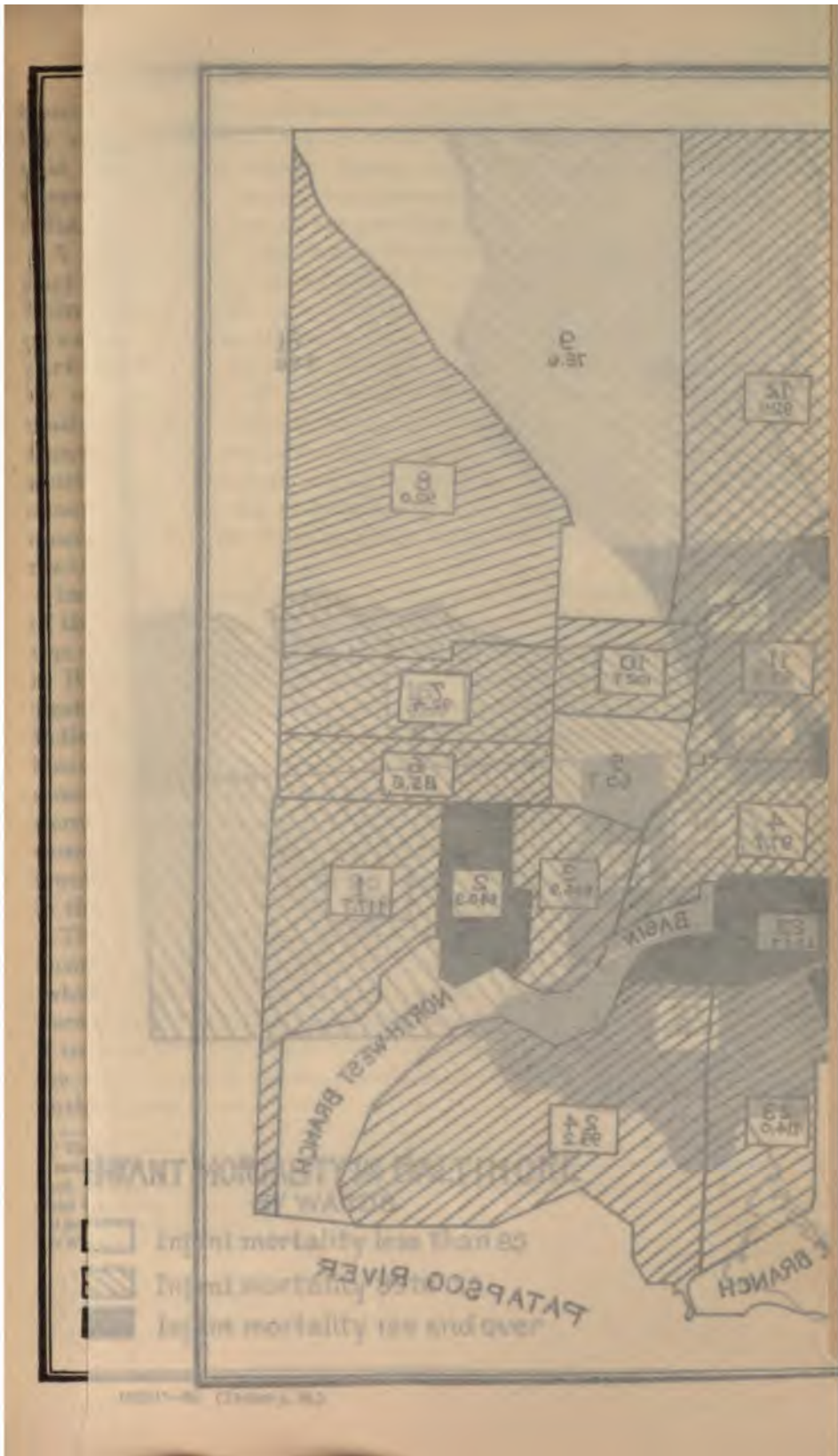
The largest distinctively foreign neighborhoods lay east of the fourth ward. Crossing the Fallsway eastward on Baltimore Street, one stepped from the business of the fourth ward into a district of dwellings and small shops from which the main currents of city life seemed singularly remote. In the fifth ward and the third ward which lay north and south of East Baltimore Street at this point, only 13 per cent of the babies were born to native white mothers. Almost half were foreign-born Jewish and one-fifth were Italian.

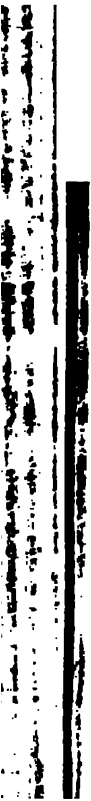
Just south of East Baltimore Street, in the third ward, were the blocks described in detail as the Albemarle Street district in the 1907 study of housing conditions in Baltimore.¹³ Except that between 1907 and 1915 the sewer had been built and many, though not all, of the toilets in the third ward had been connected, that report gives a true picture of the neighborhood when the babies studied were born—one-family dwellings used as tenements; extensions crowding the lots and reducing light and air to a minimum; poorly paved yards reeking with waste water (the gutters in many streets still ran with surface drainage); and live stock in congested sheds or cellars, chicken slaughterhouses, stables, and manure piles adding their odors to the general stench.

Farther south and east in the third ward the neighborhood shifted; the Jewish signs were less frequent and the Polish colony began. The Polish colony was nearer the water front in the third ward, and in the second ward and the first which follow on the east.

A typical neighborhood in the Polish colony is described in the 1907 housing report referred to above. Here also the one-family

¹³ Housing Conditions in Baltimore, a study under direction of Association for the Improvement of the Condition of the Poor and Charity Organization Society, Baltimore, 1907.





house of an earlier day was the prevailing type of tenement. In lot congestion and in neglect of necessary repairs, the report found this neighborhood slightly better than the Albemarle district, and there were no chicken slaughterhouses. Dampness, however, in cellars and yards was no less prevalent.

A much smaller Polish colony lived across the Basin, in the eastern part of the twenty-fourth ward in the district known as Locust Point. Behind the railroad piers, the dry docks, and the grain elevators which line the water front, and separated from the western part of the ward by railroad tracks and, at the time of this study, by a wide stretch of unbuilt land, lived this isolated community, made up largely of Poles and other foreigners working on the water front and in the big industrial plants of the districts.¹⁴ The lack of sanitation and the filthy condition of the streets in this district were conspicuous. In the twenty-fourth ward as a whole considerably more than half the babies were in homes which had no sewer connection.¹⁵

In the foreign neighborhoods west and south of the business center of the fourth ward,¹⁶ the largest single group of foreign-born families was the Lithuanian, and 91 of the 100 babies of Lithuanian mothers in Baltimore lived in the fourth or the twenty-second ward or just west of these in the eighteenth or the twenty-first ward. Almost no Polish families lived in the wards west and south of the central business district, and foreign-born Jewish families were slightly less numerous than Italian families. In the twenty-second ward, also, were the blocks selected in the 1907 housing study to show the worst conditions in negro dwellings in Baltimore. But there were fewer births to colored mothers than to foreign-born white mothers in this ward.

The largest negro neighborhood lay northwest of the downtown business district. More than half the births in the seventeenth ward (which adjoined to the north the western part of the fourth ward) were colored; and this ward, with the fourteenth which lay beyond it to the north and the eleventh ward which adjoined them both on the east, included almost one-third of the total number of negro births in Baltimore.

¹⁴ The tabulations do not show how the 447 live births to native white mothers and the 158 live births to foreign-born white mothers were divided between the Locust Point district and the western part of the ward. But the Locust Point district was popularly supposed to be chiefly foreign and the western part of the ward chiefly native born.

¹⁵ See Table 4, Appendix VII, p. 224.

¹⁶ Wards 4, 18, 21, 22, 23, and 24 except Locust Point.

TABLE I.—*Ward of residence; live births to colored mothers in 1915.*

Ward group.	Live births to colored mothers.	
	Number.	Per cent distribution.
Total.....	1,305	100.0
Wards 11, 14, 17.....	414	31.7
Wards 15, 16, 18, 22.....	332	25.4
All other wards ¹	559	42.4

¹ Wards in which less than one-fifth of the births were to colored mothers.

Certain alleys in the seventeenth ward were described in the 1907 study of housing conditions in Baltimore as typical of negro alley dwellings in the city. This study showed space to be less congested in the Negro alleys than in the Jewish and Polish districts east of the Fallsway. But it found a higher percentage of dwellings seriously out of repair, and it referred especially to the lack of decent toilet facilities and to the filthy dampness of the alleyways. At the time of this study the percentage of babies born into homes which lacked sewer connection was more than twice as high in the seventeenth ward as that in any one of the four poorest white wards.¹⁷

Around these districts, where the poorest homes predominated and where native white families were in the minority, the city stretched out to the east, to the north, and to the west. The small downtown district of fashion and wealth lay directly north of the fourth ward—a narrow belt in the eleventh ward—between the negro district on the west and the steep slope that dropped to the factories and railroad tracks along the Fallsway on the east. The other choice residential districts were to the north and northwest of this, about Druid Hill Park and toward the Johns Hopkins University and beyond.¹⁸

In no ward, however, did births among the well-to-do predominate, and no ward was without a quota of foreign-born and negro families.¹⁹

Baltimore has been called a city of homes. The present study offers no basis for comparing Baltimore with other cities in respect to the prevalence of one-family houses, but it was found that slightly more than two-thirds (68 per cent) of the infants whose dwellings were studied lived in one-dwelling buildings and only 3 per cent lived in buildings of five or more dwellings.²⁰ Twenty-eight per cent of

¹⁷ Wards 2, 3, 5, and 22 showed median earnings of the fathers under \$650. For exact percentages of dwellings with sewer connection in the several wards, see Table 4, Appendix VII, p. 225.

¹⁸ Of the 197 live births in families where the father earned \$2,850 and over, 134, or 68 per cent, lived in the eleventh ward, or in the twelfth, thirteenth, fourteenth, or fifteenth wards to the north or northwest of the eleventh ward. Of the 44 infants surviving at least two weeks who lived in rented dwellings with rental of \$50 or more a month, 42 lived in these five wards. See Tables 5 and 6, Appendix VII, pp. 226 and 228.

¹⁹ See Tables 3 and 5, Appendix VII, pp. 224 and 226.

²⁰ See Table 10, Appendix VII, p. 230.

the families owned the dwellings in which they lived, but behind this average percentage there were wide variations in the different wards and in the different earnings groups. Speaking generally, the higher the fathers' earnings and the higher the economic level within a ward the higher was the percentage of families owning the dwelling in which they lived. This percentage rose to 50 per cent and 56 per cent, respectively, among the families throughout the city where the fathers earned \$1,250 to \$1,849, and \$1,850 and over. Wards 1, 6, 7, 9, 15, and 16 also showed more than one-third of the infants in families who owned their dwellings. But these should be contrasted with the seven wards (4, 5, 11, 17, 18, 22, and 23) where only 15 per cent or less owned their dwellings, and the very small percentages of homes owned by families in the lower earnings groups.²¹

Baltimore is built on the alley plan, and in these narrow back streets lived a considerable percentage of the population, especially of the negroes. The evils of unpaved and dirty alleys were recognized by the city officials, and in 1916, during the epidemic of poliomyelitis, a systematic flushing of the alleys was attempted. Paving of the alleys was gradually being pushed, but the *Municipal Journal* stated in February, 1917, that 800 alleys were then under contract to be paved and in addition 1,279 alleys had not yet been paved nor contracted for. Alley dwellings have not been tabulated separately in the present study, but they unquestionably housed many of the colored babies and many of the babies in the poorest white families.

The sewerage system of Baltimore was opened in 1911. Of the 10,336 infants whose dwellings are included in the present study, 2,364, or 23 per cent, had toilets not connected with the sewer. The great majority of these dwellings were in wards which included open blocks and outlying districts. The tabulations do not show how many of the dwellings without sewer connection were in open blocks and how many in thickly settled parts of these wards. It was found, however, that in 13 wards having no outlying districts, 598 infants lived in dwellings without sewer connection, and the percentage having no sewer connection varied in these 13 wards from 1 per cent in the fourth ward to 35 per cent in the nineteenth ward and 37 per cent in the first ward.²²

During 1916 a vigorous clean-up campaign was inaugurated, the Women's Civic League and the Women's Cooperative Civic League working with the city departments to secure the cooperation of householders throughout the city in more efficient handling of garbage and other refuse. In 1916 a city ordinance was enacted requiring householders to use covered metal cans for garbage awaiting collection.

²¹ See Tables 7 and 9, Appendix VII, pp. 229 and 230.

²² See Table 4, Appendix VII, p. 225.

MOTHERS' COLOR AND NATIONALITY.

The group of Baltimore births includes nearly 7,000 native white families, nearly 3,000 white families in which the mother was of foreign birth, and more than 1,000 negro families. Or, in exact percentages, 62 per cent of the births were to native white mothers, 25 per cent to foreign-born white mothers, and 13 per cent to negro mothers.²³

TABLE II.—*Color and nativity of mother; births in 1915.*

Color and nativity of mother.	Births in 1915.	
	Number.	Per cent distribution.
Total.....	11, 996	100.0
Native white.....	6, 937	62.0
Foreign-born white.....	2, 857	25.3
Colored.....	1, 421	12.6

Foreign-born white families.

The tabulations do not show how many of the native white mothers were of foreign parentage and what foreign stocks predominated; but in 1910, according to the Federal census, more than one-third (34 per cent) of the native white population of all ages and both sexes was of foreign or mixed parentage. The principal groups were, in the order named, German, English and Celtic (chiefly Irish), Jewish, and Polish. Together these groups comprised almost 90 per cent of the total number of native white persons of foreign or mixed parentage and about 30 per cent of the total native white population.²⁴

In 1910 the same four groups predominated among the foreign-born population in Baltimore that have been noted among the native white population of foreign or mixed parentage. The order of numerical importance was somewhat different, however, with the Jewish and Polish groups each larger than the English and Celtic (chiefly Irish) group. The German group was both actually and relatively smaller among the foreign-born white population than among the native white population of foreign or mixed parentage. In the present study, based on births in Baltimore during the year 1915, the group of foreign-born German mothers was smaller than the groups of foreign-born Jewish, Polish, or Italian mothers.

Certain important elements in the foreign-born population of the United States were not sufficiently represented in Baltimore to appear in the present study. For example, the detailed study of legitimate

²³ See Table 69, Appendix VII, p. 280.²⁴ See Table 11, Appendix VII, p. 230.

births includes 21 births to foreign-born mothers of western European nationalities other than German or English and Celtic, and 77 to mothers of eastern European nationalities other than Polish, Bohemian, and Lithuanian. In the analysis of conditions and mortality rates in the foreign-born families—that is, among infants of foreign-born white mothers—discussion will cover mainly the Jewish, Polish, and Italian groups.

TABLE III.—*Nationality of mother; births in 1915 to foreign-born white mothers.*

Nationality of mother.	Births ¹ to foreign-born white mothers.		Nationality of mother.	Births ¹ to foreign-born white mothers.	
	Number.	Per cent distribution.		Number.	Percent distribution.
Total.....	2,894	100.0	Bohemian.....	112	3.9
Jewish.....	1,011	34.9	Lithuanian.....	105	3.6
Polish.....	655	22.6	Russian.....	24	.8
Italian.....	440	15.2	Other western European ²	21	.7
German.....	331	11.4	Other eastern European ³	53	1.8
Irish.....	101	3.5	All other ⁴	4	.1
English, Scotch, and English-Canadian.....	37	1.3			

¹ Includes miscarriages.

² 8 Norwegian, 5 French, 3 Dutch, 2 Swedish, 2 Spanish, 1 Danish.

³ 19 Greek, 13 Magyar, 6 Serbian, 5 Slovak, 4 Rumanian, 4 Ruthenian, 2 Slavic (not otherwise specified).

⁴ 3 French-Canadian, 1 Arabian.

The length of time these different groups had been in the United States reflects the general shifts in the tide of immigration. More than 25 per cent of the German, Bohemian, and English and Celtic mothers had been here 20 years or longer,²⁵ and less than half had come during the last 10 years.

Length of residence of mother in the United States.	Per cent distribution of births ^a in 1915.		
	German mothers.	English and Celtic mothers.	Bohemian mothers.
Total.....	100.0	100.0	100.0
Under 10 years.....	34.7	28.3	39.3
10 years, under 20.....	24.7	41.3	29.5
20 years and over.....	39.3	29.0	30.4
Not reported.....	1.3	1.4	0.8

^a Includes miscarriages.

Among the Lithuanians and Italians and the 102 mothers of various nationalities (Russians, other eastern Europeans, "other western Europeans," and "all other") more than half had come to the United States within 10 years and, except among the Lithuanians, more

²⁵ The difference between these three groups should be noted.

METHOD AND PURPOSE OF THE STUDY.

The study is based primarily on the registered births (including stillbirths and miscarriages) occurring in Baltimore during the year 1915³ and the deaths among these infants within 12 months after birth (in 1915 or 1916). The information was secured in part from the birth certificates and death certificates on file with the Baltimore Department of Public Safety, subdepartment of health, and in larger measure from the mothers who were visited by women agents of the bureau as soon as possible after the first anniversary of the baby's birth.⁴ In addition, information was secured from the mothers about all their babies and the deaths (or stillbirths or miscarriages) among these earlier births.

The babies born in 1915 fall into two main groups—the 13,481 legitimate and the 1,124 illegitimate.⁵ As the study progressed, each of these two groups had to be further divided.

Among the legitimate it was found that the families of 1,466 could not be located in Baltimore or were known to have moved away; the families of 381 were omitted as nonresidents; and for 24 babies whose families were found, and who were residents of Baltimore, detailed information was not available. Such facts as are known about these 1,871 excluded births have been analyzed and are discussed in Appendix II.⁶ Therefore the normal group of legitimate births whose home surroundings were studied in detail and whose infant mortality rate is given with precision includes 11,613, or 86 per cent, of the registered legitimate births.⁶

More difficult to trace were the 1,124 illegitimate births. Only 679, or 60.4 per cent of these could be located and information secured about their surroundings and care. Such items as were given on the birth certificates and the known deaths in Baltimore or elsewhere are, however, analyzed for the larger group of all illegitimate births. The material on illegitimate infants is presented in a special section of the report.

The infant mortality rate among the legitimate babies whose histories were traced throughout the year was 103.5 per 1,000 live births. The rates for the other groups were unsatisfactory, but the known deaths among the illegitimate babies indicate a rate about three times as high as the rate in the normal group.⁷

³ For discussion of birth registration in Baltimore, see Appendix I, p. 185.

⁴ The father, provided he was able and willing to give the information, might be interviewed if the mother was not at home or if it was otherwise inexpedient to see the mother; others (as custodians or relatives living with the baby's family) might be interviewed (1) when the parents were dead or it was impossible to see them; (2) when the relation of such persons to the family and their information were such that there was no question as to their knowledge of facts; and (3) when their reliability was otherwise unquestioned.

⁵ In addition there were 28 stillbirths or miscarriages whose legitimacy was not reported and for whom no information could be secured.

⁶ See p. 189.

⁶ See Table 2, Appendix VII, p. 223.

⁷ See Table VII, p. 170. For mortality among excluded legitimate births, see Appendix II, p. 18. For mortality among illegitimate infants, see p. 168.

No rate is offered as exact for Baltimore as a whole.⁸ Even the rate for the group of families studied in detail can not be considered an exact rate for all legitimate babies in Baltimore. While all the nationalities living in Baltimore, all grades of economic status, and mothers working and not working for wages are represented in the large group on which the main body of the study is based, their distribution in the group may not be identical with their distribution in the families about which information was not secured.

But the study is directly related to the city. Certain items were noted about the houses in which the babies born in 1915 lived and civic conditions affecting their health. Families in which either mother or baby was away from Baltimore surroundings four months or more during the year were excluded from the detailed study, even when the facts about them were clear. The facts about earlier births or "maternal histories" are not, however, so directly related to Baltimore.

Many known social factors in infant mortality were present in Baltimore—poverty, gainful employment for married women, imperfect sanitation, room congestion, and artificial feeding of young babies. Whether these were more or less prevalent in Baltimore than elsewhere is a question outside the scope of the present study, the aim of which is, rather, to show how these factors, and others, were related to infant mortality among the Baltimore babies about whom detailed information was available.

Statements of nationality or color are uniformly based on the color or nationality (mother tongue) of the mother. For example, in the discussion of fathers' occupations and earnings, the fathers are sometimes referred to as native white, foreign-born white, Jewish, etc., to avoid constant repetition of some such cumbersome phrase as "fathers of babies born to native white mothers."⁹

In the distribution of certain factors—the percentage of "mothers" or "fathers" or "families" of whom one or another statement is made in the text—the presence of plural births is disregarded. It is assumed that the number of births and the number of mothers, etc., are identical. The actual error involved is slight, but it should be remembered that data are based, for example, not on "mothers employed" but on "births to mothers employed."

⁸ The relation of the rates given in this study to rates for the city as a whole is discussed in Appendix III, p. 193.

⁹ Intermarriage between white and colored is forbidden in Maryland. In the study of infant mortality in Waterbury, Conn., an analysis was made of the nationality of the mother in relation to that of the father. In 87 per cent (1,911 cases) of the total 2,197 cases, the nationality of the fathers was the same as that of the mothers. *Infant Mortality: Results of a Field Study in Waterbury, Conn., Based on Births in One Year*, by Estelle B. Hunter, Children's Bureau publication No. 29, p. 116.

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list includes the names of the members of the committee, the names of the members of the sub-committee, and the names of the members of the advisory committee. The addresses are listed in the same order as the names.

THE BABIES' SURROUNDINGS.

BALTIMORE.

In 1729 the inhabitants of Baltimore County addressed a petition to the general assembly for the erection of a town upon the Patapsco River. About 70 years later (in 1797) the town was incorporated as Baltimore City with a population of 20,000 persons. The settlement centered about the water front, and many houses of the shipbuilders, merchants, and sea captains of these early days still stand in the district east of the Fallsway. With the growth of the last century, the "old families" have moved away from the water front, wharves and warehouses have been extended, and the homes of the leaders in former days have passed to the immigrants of yesterday.

Commercially the water front has remained of primary importance to Baltimore. The city has spread far to the north and west of the original settlement, and freight yards and factories have carried business into other parts of the city, but the center of business life is still near the river. In the fourth ward, which lies at the head of the basin, just south and east of the physical center of the 30 square miles of Baltimore City,¹⁰ are the city hall and the customhouse, the newspapers, banks, and business offices, and, along the water front, docks, warehouses, and factories. East and south of the fourth ward docks and warehouses extend along the entire shore; and the irregular contour, especially marked in the southern districts, increases enormously the water front available to a comparatively small and compact territory.

But at the time of this study business did not monopolize the eight wards of the water front.¹¹ The more prosperous residents had moved to the north, but the poorest native white families and colonies of the foreign born remained. The negroes lived mainly in other sections of the city, but in the fourth ward and the twenty-second ward (directly south of the fourth) a considerable percentage of the births were colored. In the eight water-front wards were born more than one-third of the Baltimore babies of 1915.¹²

The foreign neighborhoods extended into two other wards—the eighteenth ward, just west of the fourth, and the fifth ward, just east of the fourth and north of the third. In these two small adja-

¹⁰ Before the annexation of additional territory on January 1, 1919.

¹¹ Wards 1, 2, 3, 4, 21, 22, 23, 24. For the tabulations on which following statements are based see Tables 3, 4, 5, 6, and 7, Appendix VII, pp. 226 to 229.

¹² "Baltimore" in this study refers to the 24 wards of Baltimore City as it was before the annexation of surrounding territory, January 1, 1919.

cent wards and the eight wards of the water front were more than two-thirds of the Baltimore births to foreign-born white mothers and all the foreign neighborhoods except the Bohemian colony near the Johns Hopkins Hospital. In these 10 wards, also, were nearly two-thirds (65.8 per cent) of the white babies whose fathers earned less than \$550 during the year after the birth in 1915.

Class.	Live births.		
	Baltimore City (24 wards).	The 10 wards ¹	
		Number.	Per cent.
Total.....	10,797	4,581	62.4
Foreign-born white mothers.....	2,753	1,899	69.0
White mothers, earnings of father under \$550.....	2,130	1,402	65.8

¹ Wards 1, 2, 3, 4, 5, 18, 21, 22, 23, and 24.

The largest distinctively foreign neighborhoods lay east of the fourth ward. Crossing the Fallsway eastward on Baltimore Street, one stepped from the business of the fourth ward into a district of dwellings and small shops from which the main currents of city life seemed singularly remote. In the fifth ward and the third ward which lay north and south of East Baltimore Street at this point, only 13 per cent of the babies were born to native white mothers. Almost half were foreign-born Jewish and one-fifth were Italian.

Just south of East Baltimore Street, in the third ward, were the blocks described in detail as the Albemarle Street district in the 1907 study of housing conditions in Baltimore.¹³ Except that between 1907 and 1915 the sewer had been built and many, though not all, of the toilets in the third ward had been connected, that report gives a true picture of the neighborhood when the babies studied were born—one-family dwellings used as tenements; extensions crowding the lots and reducing light and air to a minimum; poorly paved yards reeking with waste water (the gutters in many streets still ran with surface drainage); and live stock in congested sheds or cellars, chicken slaughterhouses, stables, and manure piles adding their odors to the general stench.

Farther south and east in the third ward the neighborhood shifted; the Jewish signs were less frequent and the Polish colony began. The Polish colony was nearer the water front in the third ward, and in the second ward and the first which follow on the east.

A typical neighborhood in the Polish colony is described in the 1907 housing report referred to above. Here also the one-family

¹³ Housing Conditions in Baltimore, a study under direction of Association for the Improvement of the Condition of the Poor and Charity Organization Society, Baltimore, 1907.



PATAPSCO RIVER
NORTH-WEST BRANCH

house of an earlier day was the prevailing type of tenement. In lot congestion and in neglect of necessary repairs, the report found this neighborhood slightly better than the Albemarle district, and there were no chicken slaughterhouses. Dampness, however, in cellars and yards was no less prevalent.

A much smaller Polish colony lived across the Basin, in the eastern part of the twenty-fourth ward in the district known as Locust Point. Behind the railroad piers, the dry docks, and the grain elevators which line the water front, and separated from the western part of the ward by railroad tracks and, at the time of this study, by a wide stretch of unbuilt land, lived this isolated community, made up largely of Poles and other foreigners working on the water front and in the big industrial plants of the districts.¹⁴ The lack of sanitation and the filthy condition of the streets in this district were conspicuous. In the twenty-fourth ward as a whole considerably more than half the babies were in homes which had no sewer connection.¹⁵

In the foreign neighborhoods west and south of the business center of the fourth ward,¹⁶ the largest single group of foreign-born families was the Lithuanian, and 91 of the 100 babies of Lithuanian mothers in Baltimore lived in the fourth or the twenty-second ward or just west of these in the eighteenth or the twenty-first ward. Almost no Polish families lived in the wards west and south of the central business district, and foreign-born Jewish families were slightly less numerous than Italian families. In the twenty-second ward, also, were the blocks selected in the 1907 housing study to show the worst conditions in negro dwellings in Baltimore. But there were fewer births to colored mothers than to foreign-born white mothers in this ward.

The largest negro neighborhood lay northwest of the downtown business district. More than half the births in the seventeenth ward (which adjoined to the north the western part of the fourth ward) were colored; and this ward, with the fourteenth which lay beyond it to the north and the eleventh ward which adjoined them both on the east, included almost one-third of the total number of negro births in Baltimore.

¹⁴ The tabulations do not show how the 447 live births to native white mothers and the 158 live births to foreign-born white mothers were divided between the Locust Point district and the western part of the ward. But the Locust Point district was popularly supposed to be chiefly foreign and the western part of the ward chiefly native born.

¹⁵ See Table 4, Appendix VII, p. 224.

¹⁶ Wards 4, 18, 21, 22, 23, and 24 except Locust Point.

TABLE I.—*Ward of residence; live births to colored mothers in 1915.*

Ward group.	Live births to colored mothers.	
	Number.	Per cent distribution.
Total.....	1,305	100.00
Wards 11, 14, 17.....	414	31.7
Wards 15, 16, 18, 22.....	338	25.9
All other wards ¹	553	42.4

¹ Wards in which less than one-fifth of the births were to colored mothers.

Certain alleys in the seventeenth ward were described in the 1907 study of housing conditions in Baltimore as typical of negro alley dwellings in the city. This study showed space to be less congested in the Negro alleys than in the Jewish and Polish districts east of the Fallsway. But it found a higher percentage of dwellings seriously out of repair, and it referred especially to the lack of decent toilet facilities and to the filthy dampness of the alleyways. At the time of this study the percentage of babies born into homes which lacked sewer connection was more than twice as high in the seventeenth ward as that in any one of the four poorest white wards.¹⁷

Around these districts, where the poorest homes predominated and where native white families were in the minority, the city stretched out to the east, to the north, and to the west. The small downtown district of fashion and wealth lay directly north of the fourth ward—a narrow belt in the eleventh ward—between the negro district on the west and the steep slope that dropped to the factories and railroad tracks along the Fallsway on the east. The other choice residential districts were to the north and northwest of this, about Druid Hill Park and toward the Johns Hopkins University and beyond.¹⁸

In no ward, however, did births among the well-to-do predominate, and no ward was without a quota of foreign-born and negro families.¹⁹

Baltimore has been called a city of homes. The present study offers no basis for comparing Baltimore with other cities in respect to the prevalence of one-family houses, but it was found that slightly more than two-thirds (68 per cent) of the infants whose dwellings were studied lived in one-dwelling buildings and only 3 per cent lived in buildings of five or more dwellings.²⁰ Twenty-eight per cent of

¹⁷ Wards 2, 3, 5, and 22 showed median earnings of the fathers under \$650. For exact percentages of dwellings with sewer connection in the several wards, see Table 4, Appendix VII, p. 225.

¹⁸ Of the 197 live births in families where the father earned \$2,450 and over, 134, or 68 per cent, lived in the eleventh ward, or in the twelfth, thirteenth, fourteenth, or fifteenth wards to the north or northwest of the eleventh ward. Of the 44 infants surviving at least two weeks who lived in rented dwellings with rental of \$50 or more a month, 42 lived in these five wards. See Tables 5 and 6, Appendix VII, pp. 226 and 228.

¹⁹ See Tables 3 and 5, Appendix VII, pp. 224 and 226.

²⁰ See Table 10, Appendix VII, p. 230.

the families owned the dwellings in which they lived, but behind this average percentage there were wide variations in the different wards and in the different earnings groups. Speaking generally, the higher the fathers' earnings and the higher the economic level within a ward the higher was the percentage of families owning the dwelling in which they lived. This percentage rose to 50 per cent and 56 per cent, respectively, among the families throughout the city where the fathers earned \$1,250 to \$1,849, and \$1,850 and over. Wards 1, 6, 7, 9, 15, and 16 also showed more than one-third of the infants in families who owned their dwellings. But these should be contrasted with the seven wards (4, 5, 11, 17, 18, 22, and 23) where only 15 per cent or less owned their dwellings, and the very small percentages of homes owned by families in the lower earnings groups.²¹

Baltimore is built on the alley plan, and in these narrow back streets lived a considerable percentage of the population, especially of the negroes. The evils of unpaved and dirty alleys were recognized by the city officials, and in 1916, during the epidemic of poliomyelitis, a systematic flushing of the alleys was attempted. Paving of the alleys was gradually being pushed, but the *Municipal Journal* stated in February, 1917, that 800 alleys were then under contract to be paved and in addition 1,279 alleys had not yet been paved nor contracted for. Alley dwellings have not been tabulated separately in the present study, but they unquestionably housed many of the colored babies and many of the babies in the poorest white families.

The sewerage system of Baltimore was opened in 1911. Of the 10,336 infants whose dwellings are included in the present study, 2,364, or 23 per cent, had toilets not connected with the sewer. The great majority of these dwellings were in wards which included open blocks and outlying districts. The tabulations do not show how many of the dwellings without sewer connection were in open blocks and how many in thickly settled parts of these wards. It was found, however, that in 13 wards having no outlying districts, 598 infants lived in dwellings without sewer connection, and the percentage having no sewer connection varied in these 13 wards from 1 per cent in the fourth ward to 35 per cent in the nineteenth ward and 37 per cent in the first ward.²²

During 1916 a vigorous clean-up campaign was inaugurated, the Women's Civic League and the Women's Cooperative Civic League working with the city departments to secure the cooperation of householders throughout the city in more efficient handling of garbage and other refuse. In 1916 a city ordinance was enacted requiring householders to use covered metal cans for garbage awaiting collection.

²¹ See Tables 7 and 9, Appendix VII, pp. 229 and 230.

²² See Table 4, Appendix VII, p. 225.

MOTHERS' COLOR AND NATIONALITY.

The group of Baltimore births includes nearly 7,000 native white families, nearly 3,000 white families in which the mother was of foreign birth, and more than 1,000 negro families. Or, in exact percentages, 62 per cent of the births were to native white mothers, 25 per cent to foreign-born white mothers, and 13 per cent to negro mothers.²³

TABLE II.—*Color and nativity of mother; births in 1915.*

Color and nativity of mother.	Births in 1915.	
	Number.	Per cent distribution.
Total.....	11, 195	100.0
Native white.....	6, 937	62.0
Foreign-born white.....	2, 837	25.3
Colored.....	1, 421	12.6

Foreign-born white families.

The tabulations do not show how many of the native white mothers were of foreign parentage and what foreign stocks predominated; but in 1910, according to the Federal census, more than one-third (34 per cent) of the native white population of all ages and both sexes was of foreign or mixed parentage. The principal groups were, in the order named, German, English and Celtic (chiefly Irish), Jewish, and Polish. Together these groups comprised almost 90 per cent of the total number of native white persons of foreign or mixed parentage and about 30 per cent of the total native white population.²⁴

In 1910 the same four groups predominated among the foreign-born population in Baltimore that have been noted among the native white population of foreign or mixed parentage. The order of numerical importance was somewhat different, however, with the Jewish and Polish groups each larger than the English and Celtic (chiefly Irish) group. The German group was both actually and relatively smaller among the foreign-born white population than among the native white population of foreign or mixed parentage. In the present study, based on births in Baltimore during the year 1915, the group of foreign-born German mothers was smaller than the groups of foreign-born Jewish, Polish, or Italian mothers.

Certain important elements in the foreign-born population of the United States were not sufficiently represented in Baltimore to appear in the present study. For example, the detailed study of legitimate

²³ See Table 69, Appendix VII, p. 280.²⁴ See Table 11, Appendix VII, p. 230.

births includes 21 births to foreign-born mothers of western European nationalities other than German or English and Celtic, and 77 to mothers of eastern European nationalities other than Polish, Bohemian, and Lithuanian. In the analysis of conditions and mortality rates in the foreign-born families—that is, among infants of foreign-born white mothers—discussion will cover mainly the Jewish, Polish, and Italian groups.

TABLE III.—*Nationality of mother; births in 1915 to foreign-born white mothers.*

Nationality of mother.	Births ¹ to foreign-born white mothers.		Nationality of mother.	Births ¹ to foreign-born white mothers.	
	Number.	Per cent distribution.		Number.	Percent distribution.
Total.....	2,894	100.0	Bohemian.....	112	3.9
Jewish.....	1,011	34.9	Lithuanian.....	105	3.6
Polish.....	655	22.6	Russian.....	24	.8
Italian.....	440	15.2	Other western European ²	21	.7
German.....	331	11.4	Other eastern European ³	53	1.8
Irish.....	101	3.5	All other ⁴	4	.1
English, Scotch, and English-Canadian.....	37	1.3			

¹ Includes miscarriages.

² 8 Norwegian, 5 French, 3 Dutch, 2 Swedish, 2 Spanish, 1 Danish.

³ 19 Greek, 13 Magyar, 6 Serbian, 5 Slovak, 4 Rumanian, 4 Ruthenian, 2 Slavic (not otherwise specified).

⁴ 3 French-Canadian, 1 Arabian.

The length of time these different groups had been in the United States reflects the general shifts in the tide of immigration. More than 25 per cent of the German, Bohemian, and English and Celtic mothers had been here 20 years or longer,²⁵ and less than half had come during the last 10 years.

Length of residence of mother in the United States.	Per cent distribution of births ^a in 1915.		
	German mothers.	English and Celtic mothers.	Bohemian mothers.
Total.....	100.0	100.0	100.0
Under 10 years.....	34.7	28.3	39.3
10 years, under 20.....	24.7	41.3	29.5
20 years and over.....	39.3	29.0	30.4
Not reported.....	1.3	1.4	0.8

^a Includes miscarriages.

Among the Lithuanians and Italians and the 102 mothers of various nationalities (Russians, other eastern Europeans, "other western Europeans," and "all other") more than half had come to the United States within 10 years and, except among the Lithuanians, more

²⁵ The difference between these three groups should be noted.

than one-third had come within 5 years. The Jewish and Polish immigration had been more evenly distributed over a long period of years than any other, with more mothers who had come during the last 10 years than during the 10 years next preceding, but also with a high percentage who had been in the United States 20 years or more.²⁶

The groups which had been longest in the United States were least separated from the life of the community. Their economic status approached that of the native white American; the mothers more generally spoke English; and the families lived not in the poorest neighborhoods where the foreign born predominate, but in wards of average prosperity, where more than half the births were to native white mothers.

TABLE IV.—Median earnings of fathers and percentage of mothers unable to speak English, by color and nationality of mother; live births in 1915.

Color and nationality of mother.	Median earnings of fathers. ^a	Per cent of mothers unable to speak English. ^b	Color and nationality of mother.	Median earnings of fathers. ^a	Per cent of mothers unable to speak English. ^b
Native white.....	\$796	.....	Foreign-born white—Contd.		
Foreign-born white.....	619	37.3	Polish.....	\$556	63.5
English and Celtic.....	781	.....	Lithuanian.....	525	71.4
German.....	718	14.4	Italian.....	540	68.0
Bohemian.....	703	17.9	All other.....	671	61.1
Jewish.....	664	18.4	Colored.....	474	9.1

^a Based on births, not including miscarriages except for English and Celtic, Bohemian, Lithuanian, and "all other foreign." For method by which median earnings are computed, see Appendix IV, p. 197.

^b Based on births, not including miscarriages except for Bohemian, Lithuanian, "all other foreign," and colored.

Nationality of mother.	Births ^a in 1915.	Estimated median residence of mother in United States.	
		Years.	Months.
English and Celtic.....	138	14	6
German.....	331	14	2
Bohemian.....	112	12	6
Jewish.....	1 011	10	5
Polish.....	655	9	4
Lithuanian.....	105	8	.....
Italian.....	440	7	3
All other foreign-born white.....	102	5	5

^a Includes miscarriages.

The median conceals, however, the important fact that 20 per cent of the Poles and only 6 per cent of the Lithuanians had been in this country 20 years or longer. For detailed tabulation see Table 12, Appendix VII, p. 231.

²⁶ The median residence in the United States reported by the several groups offers a convenient summary of their relation on this point.

While, on the whole, the nationality groups varied in these respects according to the median periods that they had been in the United States, three exceptions appear—among the Italians, the Bohemians, and the mixed group of “all other foreign.”

The Italian families, among whom relatively more had come within the last five years than the Lithuanians, reported higher median earnings than the Lithuanians and a slightly smaller percentage of mothers unable to speak English. The Italians were also more widely scattered through the city than the Lithuanians.²⁷

The Bohemian families, who belonged to the older immigration and whose economic status was far above that of the recent immigrants, had stayed mainly in one district. Of the 107 live births to Bohemian mothers, 93, or 87 per cent, were in the three wards about Johns Hopkins Hospital, a distinct colony in wards where, on the whole, native white families predominated.²⁸ On the other hand, the Bohemian families had a higher percentage owning their homes than any other group in Baltimore—not only higher than any other foreign-born group, but also more than twice as high as the native white group: Bohemians, 73 per cent; native white families, 31 per cent.

The mixed group of “all other foreign” families, in spite of the shortest median period in the United States, had higher median earnings than any other foreign group except the English and Celtic, German, and Bohemian, and fewer mothers unable to speak English than the Poles, Italians, and Lithuanians. It will be remembered that about one-fifth of the “all other foreign” families were western Europeans of the older immigration, but in the main this group consisted of Russians and southeastern Europeans. In this group, also, the percentage of families owning their homes (33 per cent) was about equal to the percentage among the native white families (31 per cent) and higher than that among any other foreign group except the Bohemians (73 per cent) and the Germans (47 per cent).²⁹

Furthermore, while the variations in the extent to which foreign-born mothers had learned English correspond roughly with the variations in the length of time that the groups had been in the United States, certain marked differences persist when a comparison is made of the mothers in each nationality who had been in the United States less than 5 years, or those who had been here 10 years and

²⁷ Of the 100 Lithuanians, 91 were in a compact neighborhood made up of parts of 4 contiguous wards, while 16 wards reported no birth to a Lithuanian mother. Of the 412 Italians, 50 per cent were in the 2 wards just east of the Fallsway (the third and the fifth), 26 per cent were in the other wards of the water front (wards 1, 2, 4, 21, 22, 23, and 24), and the remainder were distributed throughout the city. Only 3 wards (the ninth, eleventh, and the thirteenth) reported no live birth to an Italian mother. See Table 3, Appendix VII, p. 224.

²⁸ Wards 6, 7, and 8. See Table 3, Appendix VII, p. 224.

²⁹ For percentages of homes owned in the several groups, see Table 8, Appendix VII, p. 229.

than one-third had come within 5 years. The Jewish and Polish immigration had been more evenly distributed over a long period of years than any other, with more mothers who had come during the last 10 years than during the 10 years next preceding, but also with a high percentage who had been in the United States 20 years or more.²⁶

The groups which had been longest in the United States were least separated from the life of the community. Their economic status approached that of the native white American; the mothers more generally spoke English; and the families lived not in the poorest neighborhoods where the foreign born predominate, but in wards of average prosperity, where more than half the births were to native white mothers.

TABLE IV.—Median earnings of fathers and percentage of mothers unable to speak English, by color and nationality of mother; live births in 1915.

Color and nationality of mother.	Median earnings of fathers. ^a	Per cent of mothers unable to speak English. ^b	Color and nationality of mother.	Median earnings of fathers. ^a	Per cent of mothers unable to speak English. ^b
Native white.....	\$796	.....	Foreign-born white—Contd.		
Foreign-born white.....	619	37.3	Polish.....	\$555	62.5
English and Celtic.....	781	.....	Lithuanian.....	525	71.4
German.....	718	14.4	Italian.....	540	68.0
Bohemian.....	703	17.9	All other.....	671	43.1
Jewish.....	664	18.4	Colored.....	474	0.1

^a Based on births, not including miscarriages except for English and Celtic, Bohemian, Lithuanian, and "all other foreign." For method by which median earnings are computed, see Appendix IV, p. 197.

^b Based on births, not including miscarriages except for Bohemian, Lithuanian, "all other foreign," and colored.

Nationality of mother.	Births ^a in 1915.	Estimated median residence of mother in United States.	
		Years.	Months.
English and Celtic.....	138	14	6
German.....	331	14	2
Bohemian.....	112	12	6
Jewish.....	1 011	10	5
Polish.....	655	9	8
Lithuanian.....	105	8	.....
Italian.....	440	7	5
All other foreign-born white.....	102	5	5

^a Includes miscarriages.

The median conceals, however, the important fact that 20 per cent of the Poles and only 6 per cent of the Lithuanians had been in this country 20 years or longer. For detailed tabulation see Table 12, Appendix VII, p. 231.

²⁶ The median residence in the United States reported by the several groups offers a convenient summary of their relation on this point.

While, on the whole, the nationality groups varied in these respects according to the median periods that they had been in the United States, three exceptions appear—among the Italians, the Bohemians, and the mixed group of "all other foreign."

The Italian families, among whom relatively more had come within the last five years than the Lithuanians, reported higher median earnings than the Lithuanians and a slightly smaller percentage of mothers unable to speak English. The Italians were also more widely scattered through the city than the Lithuanians.²⁷

The Bohemian families, who belonged to the older immigration and whose economic status was far above that of the recent immigrants, had stayed mainly in one district. Of the 107 live births to Bohemian mothers, 93, or 87 per cent, were in the three wards about Johns Hopkins Hospital, a distinct colony in wards where, on the whole, native white families predominated.²⁸ On the other hand, the Bohemian families had a higher percentage owning their homes than any other group in Baltimore—not only higher than any other foreign-born group, but also more than twice as high as the native white group: Bohemians, 73 per cent; native white families, 31 per cent.

The mixed group of "all other foreign" families, in spite of the shortest median period in the United States, had higher median earnings than any other foreign group except the English and German, and Bohemian, and fewer mothers unable to speak English than the Poles, Italians, and Lithuanians. It will be seen that about one-fifth of the "all other foreign" families consisted of Europeans of the older immigration, but in the main they consisted of Russians and southeastern Europeans. In fact, the percentage of families owning their homes (33 per cent) was equal to the percentage among the native white families and higher than that among any other foreign group except the Bohemians (73 per cent) and the Germans (47 per cent).

Furthermore, while the variations in the extent to which the foreign-born mothers had learned English corresponded to the median variations in the length of time that they had been in the United States, certain marked differences were seen on a whole in the length of time that the mothers had been in the United States, certain marked differences were seen on a whole in the length of time that the mothers had been in the United States less than 5 years, or those who had been in the United States because they had been born into the United States.

²⁷ Of the 100 Lithuanians, 91 were in a compact neighborhood in the north-western part of the city, while 16 wards reported no birth to a Lithuanian mother. The Lithuanians were also reported in the wards just east of the Fallsway (the third and the fifth), in the north-eastern part of the city (wards 1, 2, 4, 21, 22, 23, and 24), and the remainder in the south-eastern part of the city (wards the ninth, eleventh, and the thirteenth) reported in the Appendix VII, p. 224.

²⁸ Wards 6, 7, and 8. See Table 3, Appendix VII, p. 224.

²⁹ For percentages of homes owned in the several groups, see Appendix VII, p. 224.

over. In each comparison, a relatively high percentage of the Poles and of the Italians and a relatively low percentage of the Jews spoke no English.³⁰ The fact that illiteracy was far more prevalent among the Poles and Italians than among the other foreign born may account in part for their failure to learn English. For within each nationality³¹ a higher percentage of mothers spoke English among those who could read and write than among the illiterate.

Illiteracy, inability to speak English, and poverty seemed to go hand in hand. Not only were there more mothers who could not read and write, more mothers who could not speak English, and more very poor families among the recent immigrants (especially the Italians and the Poles) than among the Jews and the older immigration, but within each nationality, also, the poorer the fathers the higher the percentages of mothers who were cut off from the community by inability to speak English or by inability to read in any language.³²

Colored families.

The proportion of negroes in the population of Baltimore at the census of 1910 was somewhat greater than that in the United States as a whole and decidedly above the average for the cities of 500,000 or more population—15 per cent in Baltimore, 11 per cent in the United States, and 3 per cent in the large cities. In actual number of negroes Baltimore ranked in 1910 as the fourth city of the United States.³³

Practically all the negroes in Baltimore were of native birth, and most of them were born in Maryland. Nine per cent of the negroes in Maryland in 1910 had come from Virginia; 87 per cent were native in Maryland; and less than 1 per cent had come from any other State. What proportion of the negroes had been born in Baltimore is not known. The increase in negro population in Baltimore from 1900 to 1910 accompanying a decrease in negro population in the State of Maryland as a whole indicates a drift from the country to the city.³⁴

Shifting of the colored population within the city was limited at the time of this study by a segregation ordinance, which prohibited any colored person from moving into a block occupied wholly by white persons (and vice versa). This ordinance had been passed in 1913 and was in force until it became invalid through the decision

³⁰ See Table 14, Appendix VII, p. 232.

³¹ Based on data for Jewish, Polish, Italian, German and "all other foreign" (including Lithuanian). See Table 13, Appendix VII, p. 231.

³² See Tables 15 and 16, Appendix VII, p. 232.

³³ Negro population: Washington, 94,446; New York, 91,709; New Orleans, 89,262; Baltimore, 84,749; Philadelphia, 81,459; Memphis, 52,441. See U. S. Bureau of the Census, Vol. I, *Population statistics 1910*, pp. 207-213.

³⁴ U. S. Bureau of the Census, *Thirteenth Census of the United States, 1910, Vol. II, Population statistics*, p. 837; Bulletin 129, *Negroes in the United States, 1915*, pp. 14 and 58.

of the United States Supreme Court in the Louisville segregation case.³⁵ The rentals paid by colored families were excessively high.

Only 6 per cent of the colored families included in the study owned the dwellings in which they lived. This percentage was smaller than the corresponding figure in the poorest families, all nationalities combined, and smaller than in any one of the foreign groups.³⁶

Illiteracy was more prevalent among the negroes in Baltimore—13 per cent illiterate—than among the negroes in any other city having 500,000 population or over at the 1910 census. Only St. Louis approached it, with 12 per cent of the negroes illiterate.³⁷ A comparison of the negro mothers and the native white mothers included in the detailed study also indicates the neglect of education for the negroes. Thus, 12 per cent of the negro mothers as against 2 per cent of the native white mothers were unable to read and write. In the poorest native white families, where the percentage of illiteracy rose above the average (to 6 per cent in families with fathers earning less than \$450, and 5 per cent in families with fathers earning \$450 but less than \$550), it was much lower than the percentage in the negro families.

In Baltimore separate schools and playgrounds were provided for white and colored children, but the colored leaders interviewed by the agents of the bureau referred to the fact that provision for their children was inferior to that for white children. They pointed out the lack of a colored industrial school in Baltimore and the absence of provision for mental defectives.

Negroes in Baltimore had political representation; the seventeenth ward had for some years been represented by a negro in the city council. Several organizations of colored people were found working for improvement of education, of civic conditions, and of health conditions. The Federated Charities had enlisted the cooperation of colored leaders.

Such agencies as the hospitals, the Babies' Milk Fund Association, and the Children's Aid Society were serving both the white and the colored population.

Social questions arising from differences in color and nationality.

Isolation of a group from the life of the community as a whole may or may not affect the physical welfare of the babies of the group. If it deprives men of economic opportunity, because they can not pass barriers of language or of color, the babies born into their homes will pay with a high mortality the price of the fathers' poverty. If it cuts off women from the services of nurses and hos-

³⁵ *Buchanan v. Warley*, 245 U. S. 60, reversing *Harris v. City of Louisville*, 165 Ky. 539. Decided Nov. 5, 1917.

³⁶ See Tables 8 and 9, Appendix VII, pp. 229 and 230.

³⁷ U. S. Bureau of the Census, Bulletin 129, p. 102.

pitals and from opportunities to learn fundamental principles of the hygiene of maternity and infancy, the babies of the isolated group will suffer from their mothers' ignorance and lack of care. If, on the other hand, the foreign mother steps outside of her colony merely to exchange the traditions of the Old World for the habits of her American neighbors, without guidance from a trained adviser, her contact with the community will be of doubtful value to her baby.

Several items in the data collected throw light on the contacts with the community established by the groups of foreign born and by the negroes in Baltimore. It is possible to examine the occupations in which the fathers in foreign and negro families were engaged and their earnings, as compared with the earnings of fathers in the native white families in the same occupations; to compare the dwellings which, whether from choice or necessity, were occupied by the several groups, and the home conditions into which the babies were born; and to note how white and colored mothers were supplementing the fathers' earnings and the extent to which they were going out into the community to work. It has already been noted how many mothers were unable to read and write, and how many of the foreign-born white mothers spoke no English. It is interesting to see how the knowledge of English had reacted upon the customs of the foreign born in regard to infant feeding; and to what extent the community agencies for instruction in hygiene and for medical care were serving the mothers in the several groups.

FATHERS' EARNINGS AND OCCUPATIONS.

The native white families were the most well-to-do and the negro families were the poorest in the city, while the foreign-born groups varied in economic status from English and Celtic,²⁸ whose earnings were only a little lower than the earnings in the native white families, to the Lithuanians, whose earnings were considerably above the earnings of the colored fathers. In the native white group, however, less than half the fathers earned as much as \$850. The percentage of fathers earning at least \$850 ranged from 42 per cent (based on total births) of all in the native white families to 4 per cent of all in the colored families.²⁹ It may be fairly assumed that at the time of this study the difference between \$850 and \$1,850 marked the difference between a minimum of subsistence and a fair standard of comfort. Four per cent of the families (total births) lived at the comfort level; among the native white families, 6 per cent; and among the colored families, two-tenths of 1 per cent. That is to say, of the 10,797 live-born babies only 431 were in families where the father earned so much as \$1,850.

²⁸ Including Irish, Scotch, and Welsh.

²⁹ See Table 20, Appendix VII, pp. 238-239.

Fathers' earnings and family income.

The father's earnings are used as the index to the family's economic status because they are the normal source of the family income, and the assumption in the United States is that a man's earnings will be sufficient to meet the needs of wife and children. In Baltimore, the father's earnings were in fact the main source of income and usually determined the family's economic status. Fifty-five per cent of the births were in families without income from any source except the father's earnings, and 23 per cent in families where the father's earnings were supplemented only by earnings of wife or children; 4 per cent, where the family's earnings were supplemented by earnings of other relatives living in the household, or by money from pensions, or compensation allowances, and 10 per cent, where the cash earnings of the family were supplemented by gifts or by meals given in part payment for services rendered. Only 7 per cent were in families with any income from insurance, investments, or rents from tenants outside the family's dwellings.⁴⁰

Where the father's earnings were below the level of decent subsistence (reckoned at \$850 at pre-war prices), the family income also was usually below \$850. In this study 7,171 births were in families where the father earned less than \$850; of these, 3,672 had no other source of income except the father's earnings, and 2,753 reported earnings from other members of the household⁴¹ in such amounts that the aggregate earnings of the family remained below \$850. Only 109 of the families where the father earned under \$850 had total earnings from all wage earners in the family amounting to \$1,250 or more, and four-fifths of the families whose total earnings were under \$850 had no other source of income. In all, then, 7,171 births, or 64 per cent of all studied, were in families where the fathers earned less than \$850; and at least 5,249 births, or 47 per cent of all, were in families where the total family income was also less than \$850. In addition, 1,336 births, or 12 per cent, were in families where the aggregate earnings were under \$850, but were supplemented by meals, gifts, or income from other sources.

The amount of income received from insurance, investments, or rents was not asked, but simply whether the family received income from such sources. It should be noted, however, that in no fathers' earnings group under \$1,250 did so many as 10 per cent of the families report income from such sources. Where the fathers earned \$1,250 but less than \$1,850, 11 per cent reported income from insurance, investments, or rents, and where the fathers earned \$1,850 or over, 21 per cent.⁴²

⁴⁰ See Tables 26, 27, and 28, Appendix VII, pp. 243-244.

⁴¹ Including, besides earnings, pensions, compensation allowances, and alimony, where these were reported.

⁴² Tables 26, 27, and 28, Appendix VII, pp. 243-244.

The exact amounts received from family earnings apart from the father's earnings are not tabulated in detail. It is known, however, that more than half the mothers who worked within the year after the baby's birth earned less than \$150.⁴³ And considering only families where fathers' earnings were supplemented by earnings of other members of the family, when earnings are classified in five groups (under \$550, \$550 to \$849, \$850 to \$1,249, \$1,250 to \$1,849, and \$1,850 and over), it is found that about one-third of the families fell in a higher earnings group on the basis of aggregate earnings than that in which they belonged on the basis of fathers' earnings.⁴⁴

Except where the father's earnings by themselves approached the level of comfort, the great majority of the families (93 per cent) were dependent on their own exertions for support. And the amounts earned by wife and children, when these were employed, were usually too small to lift the family to a definitely higher economic level than that provided by the father's earnings.

Fathers' occupations.

The differences in the earnings of the fathers in the native white, foreign-born white, and the colored groups reflect differences in the kinds of work the fathers did and in the regularity of their employment. It was commonly stated that negro workers were paid lower wages than white workers in the same occupations. The tabulations do not furnish exact evidence on this point, but they do show unmistakably that the annual earnings of negro workers were lower than the annual earnings of white workers in the same occupations. Occasional striking instances of difference in pay for white men and colored men doing the same work were noted by the bureau agents.

The census classification of occupations according to subdivisions of the great fields of manufacturing, trade, transportation, clerical occupations, domestic and personal service, public service, agriculture and animal husbandry, extraction of minerals, and professional and semiprofessional pursuits, throws little light on the economic status of the persons engaged in them. In the present study, therefore, the occupations of the fathers have first been classified according to this method and then regrouped according to the median earnings of the fathers in each occupation. This further grouping gives five classes of occupations in which median earnings were: I, under \$550; II, \$550 to \$649; III, \$650 to \$849; IV, \$850 to \$1,049; and V, \$1,050 and over.⁴⁵

⁴³ See Table 30, Appendix VII, p. 245.

⁴⁴ Four thousand seven hundred and thirty-six births were in families where fathers' earnings were supplemented by family earnings and the amounts of the fathers' earnings and the aggregate earnings were known. Sixty-five per cent fell in the same earnings group on both bases. See Tables 28 and 29, Appendix VII, pp. 243 and 244.

⁴⁵ For the method by which median earnings are computed, see Appendix IV, p. 197.

In Group I (under \$550)^a were cannery operatives; laborers, except those employed in public service; janitors and elevator men; servants, except waiters; and the small number engaged in "agriculture, animal husbandry, and extraction of minerals." In Group II (\$550 to \$649)^a were all factory operatives, except cannery workers; shoemakers and tailors; deliverymen and chauffeurs, teamsters, and expressmen; waiters; and laborers employed in public service. The total number of births with fathers in these two groups of occupations was 5,292, or 47 per cent of all births studied.

Groups III (\$650 to \$849)^a and IV (\$850 to \$1,049)^a included all the other types of skilled manual labor—blacksmiths, boilermakers, skilled mechanics in the building trades, engineers and firemen in industrial establishments, and barbers, with median earnings \$650 to \$849; compositors, electricians, machinists, conductors and railway trainmen, and express, telegraph and telephone employees, with median earnings \$850 to \$1,049. (No type of manual labor showed median earnings so high as \$1,050.) In Group III (median earnings \$650 to \$849) were included also men engaged in clerical occupations, saloon keepers and bartenders, and unclassified employees designated as "others" in manufacturing and mechanical occupations, in trade, in transportation, and in public service. Group IV (median earnings \$850 to \$1,049) included in addition to the more highly paid manual workers, salesmen and commercial travelers, firemen and policemen, proprietors and managers of hotels, pool rooms, etc., and retail and wholesale dealers, together with officials and managers in retail and wholesale trade. The number of births in families representing these two groups of occupations was a trifle smaller than the number in the more poorly paid occupations, and totaled 4,972, or 44 per cent, of all the births studied.

Group V (median earnings \$1,050 and over) was made up of men in six types of occupations—builders and contractors; manufacturers, proprietors, officials, etc., in manufacturing and mechanical industries; bankers, brokers, and real estate and insurance agents; proprietors, officials, and managers of transportation; public-service officials and inspectors; and men engaged in professional and semi-professional pursuits. Six per cent of the births in the study were in families of this group.

Two hundred and eight, or 2 per cent, of the births were in families where the father had no occupation (including seven births in families living on own income). Seventeen births, or less than 1 per cent, were in families where the occupation of the father was not reported.⁴⁶

The most poorly paid occupations—with median earnings under \$550—included more than half the fathers in the colored group,

^a Median earnings.

^b See Table 17, Appendix VII, p. 233.

almost one-fifth of the fathers in the foreign-born white, and almost one-twelfth of the fathers in the native white.⁴⁷ In the next occupation group—with median earnings between \$550 and \$650—were approximately one-third of the fathers in the colored group, more than two-fifths of the fathers in the foreign-born white, and more than one-fourth of the fathers in the native white. Together these two groups of occupations, where more than half the fathers earned less than \$650 and very few individual workers earned so much as \$1,250, included 84.7 per cent of the fathers in the colored group, 59.2 per cent of the fathers in the foreign-born white, and 34.7 per cent of the fathers in the native white.⁴⁸

More than half the fathers in the native white group and more than one-third of the fathers in the foreign-born white were in occupation Groups III and IV, mainly skilled manual occupations, with median earnings between \$650 and \$1,050. Only 8.1 per cent of the colored fathers were in this group.

The supervisory and professional occupations—Group V, with median earnings above \$1,050—included less than 10 per cent of the fathers in the native white group; 4.7 per cent of the fathers in the foreign-born white, and 1.6 per cent of the fathers in the colored.

The earnings of all fathers engaged in each occupation are included in the computation of these medians, but when the earnings of the three color and nativity groups are considered separately a marked difference in median earnings appears even within each group of occupations. The earnings were highest in the native white and lowest in the colored group. For example, in the poorly paid and mainly unskilled occupations of Group I, the median earnings of the native white were approximately \$560, the median earnings of the foreign-born white approximately \$483, and the median earnings of the colored group were approximately \$452. Again, in the occupations of Group II, with median earnings for all workers studied falling between \$550 and \$650, the median earnings of the native white group were approximately \$654, of the foreign-born white, \$585, and of the colored, \$489.⁴⁹

It appears, therefore, that relatively more of the fathers in the negro than of the fathers in the white group, and relatively more of the fathers in the foreign-born white than of the fathers in the native white group, were employed in the most unskilled and poorly paid occupations. And, among men doing the same type of work, the earnings of the native white were higher and the earnings of the negro were lower than the earnings of the foreign born.

⁴⁷ The reader is reminded that the groups are based on the color and nativity of mother.

⁴⁸ See Table 17, Appendix VII, p. 233.

⁴⁹ See Tables 20 and 21, Appendix VII, pp. 238 and 240. Median earnings are estimated from known distribution in earnings groups under \$450, \$450 to \$549, \$550 to \$649, \$650 to \$649, etc. For method, see Appendix IV, p. 197.

The actual difference in economic level comes out even more strongly when the earnings are compared without reference to the fathers' occupations. For all occupations combined, the median earnings in the native white group were \$796; in the foreign-born white, \$618; in the colored, \$474. In the native white group, 55.3 per cent of the fathers earned less than \$850 (in addition to 1.4 per cent who earned nothing); in the foreign-born white group, 73.9 per cent of the fathers earned less than \$850 (besides 1.9 per cent who earned nothing); and in the colored group, 87.3 per cent of the fathers earned less than \$850 (besides 5.2 per cent who earned nothing). Or, comparing the earnings in the several groups with the amount which the infant mortality rates seem to indicate as the minimum for providing the necessities of health and well-being, it appears that in the native white group 5.5 per cent earned at least \$1,850; in the foreign-born white group 2.2 per cent earned at least \$1,850; and in the colored group 0.2 per cent earned at least \$1,850.⁵⁰

TABLE V.—*Earnings of father by color and nativity of mother; per cent distribution of births in 1915.*

Earnings of father.	Total births.	Per cent distribution.		
		Births to—		
		Native white mothers.	Foreign-born white mothers.	Colored mothers.
Total.....	100.0	100.0	100.0	100.0
Under \$650.....	41.8	29.7	53.1	78.5
\$650-\$849.....	22.2	25.6	20.8	8.8
\$850-\$1,849.....	27.9	36.0	20.2	4.2
\$1,850 and over.....	4.0	5.5	2.2	0.2
No earnings.....	2.0	1.4	1.9	5.2
Not reported.....	2.0	1.9	1.8	3.1

Irregularity of fathers' employment.

The fathers in the native white group were more steadily employed than the fathers in the foreign-born or the colored groups, 66 per cent reporting employment throughout the year, as against 47 per cent among the foreign born and 46 per cent among the negroes.⁵¹ Nonemployment is discussed in the present study from the point of view of the family and includes not only the father's unemployment from lack of work or from illness but also any period during which he was not contributing to the support of the family because of desertion or death. Irregularity of employment has been considered in computing the father's earnings, and earnings refer in every

⁵⁰ The reader is again reminded that these figures refer to pre-war prices and earnings. For more detailed tabulation of father's earnings by color and nationality, see Table 18, Appendix VII, p. 234.

⁵¹ See Table 23, Appendix VII, p. 241.

case to amounts actually received during the year following the birth of the infant in 1915.⁴²

Relatively more nonemployment was ascribed to lack of work and to illness among the fathers in the foreign-born white than among the fathers in the negro group; and among the fathers in the negro group the number "nonemployed" for other reasons, including desertion of the family, was relatively high.

TABLE VI.—Per cent of fathers "nonemployed" by cause of nonemployment and color and nativity of mother; births in 1915.¹

Color and nativity of mother.	Per cent of fathers non-employed.		
	Cause of nonemployment.		
	Work not available.	Illness.	Other causes (including desertion).
Total.....	32.4	6.4	2.6
Native white.....	26.0	6.1	2.0
Foreign-born white.....	44.0	7.9	1.6
Colored.....	40.5	5.2	7.6

¹ See Table 24, Appendix VII, p. 242.

Comparing those in each group whose nonemployment was ascribed to lack of work and for whom the period of nonemployment was definitely stated, it is found that relatively more of the foreign born than of the native, whether white or colored, were out of work for six months or more—12 per cent of the unemployed foreign born, 6 per cent of the unemployed native white, and 5 per cent of the unemployed negroes.⁴³

The nonemployment from other causes, including illness and desertion, was, in each group, of somewhat longer duration than the nonemployment from lack of work, and when all nonemployment, from whatever cause, is considered together it appears that the period of nonemployment was at least six months for 12.5 per cent of the irregularly employed fathers in the native white group, for 16.2 per cent of the irregularly employed fathers in the foreign-born white group, and for 21.7 per cent of the irregularly employed fathers in the colored group.

⁴² In the majority of cases the computations were based on reports made by the mothers of the weekly or the monthly wages and the time out of work. In the study of infant mortality in Manchester, N. H., similar reports of fathers' earnings were tested with pay-roll data; it was found that on the whole the mothers' statements were substantially correct, with perhaps a slight tendency to overstatement. See Infant Mortality. Results of a Field Study in Manchester, N. H., Based on Births in One Year, by Beatrice Sheets Duncan and Emma Duke, Children's Bureau publication No. 20, pp. 15 and 16.

⁴³ See Table 26, Appendix VII, p. 242.

TABLE VII.—Duration of nonemployment of father by color and nativity of mother; births in 1915 with fathers reporting duration of nonemployment.

Duration of nonemployment of father.	Per cent distribution of fathers nonemployed. ¹		
	Native white group.	Foreign-born white group.	Colored group.
Total.....	100.0	100.0	100.0
Under 3 months.....	69.4	54.3	59.0
3-6 months.....	18.1	29.5	19.4
6 months and over.....	12.5	16.2	21.7

¹ Based on births.

The extent to which nonemployment was responsible for low earnings among the fathers in the native white, the foreign-born white, and the colored groups is indicated by the following figures.

Among all the fathers in the native white group earning less than \$450 during the year, 10 per cent were steadily employed and 27.2 per cent were nonemployed for at least six months; in the foreign-born white group earning less than \$450 during the year, 12.2 per cent were steadily employed and 19.4 per cent were nonemployed for at least 6 months; but in the colored group, 32.2 per cent of those earning less than \$450 were steadily employed throughout the year and only 7.9 per cent were nonemployed for six months or more. (In each color and nativity group there were also a considerable number reported as nonemployed but with no report as to the period of nonemployment. This number was 14.8 per cent of the native white, 19.7 per cent of the foreign-born white, and 18.2 per cent of the colored fathers, respectively, in the group earning less than \$450.) In the next earnings groups, where the fathers earned from \$450 to \$549 or from \$550 to \$649, relatively more of the fathers in the colored than of the fathers in the white group were steadily employed, and fewer of the fathers in the colored than of the fathers in the white group were without employment for three months or more. But in these earnings groups there was far more nonemployment among the fathers in the foreign-born group than among those in the native white group. In the higher earnings groups, where more steady employment was reported among all types of families, the total number of colored fathers was small.

Again, it is possible to compare, roughly, the median earnings of all fathers in the native white, the foreign-born white, and the colored groups with the median earnings of those fathers in the same groups who were steadily employed. The smallest difference appears in the colored group and the largest difference in the foreign-born white group, in spite of the fact, already noted, that on the whole

in these two groups the percentage of fathers irregularly employed was practically identical.

TABLE VIII.—Median earnings of fathers steadily employed compared with all fathers, by color and nativity of mother; births in 1915.

Color and nativity of mother.	Median earnings ¹	
	Fathers steadily employed.	All fathers.
Total.....	\$226	56
Native white.....	268	76
Foreign-born white.....	785	61
Colored.....	511	61

¹ Estimated from distribution of births in earnings groups "under \$450," "\$450 to \$549," "\$550 to \$649," "\$650 to \$749," "\$750 to \$849," etc. See Tables 22 and 23, Appendix VII, pp. 240 and 241.

Two things seem apparent, even from this unsatisfactory analysis: First, that in the pre-war days to which the data refer the foreign-born white man and the colored man were less regularly employed than the native white man; and, second, that from the nature of the occupations in which he was engaged and the rate at which he was paid, the colored man who was steadily employed remained in the same low earnings class with the colored man who was not steadily employed.

HOME CONDITIONS.

Many of the most important phases of home conditions do not lend themselves to tabulation, and yet a rough index for the comparison of the babies' homes among the native white families, the larger groups of foreign white families, and the negro families is afforded by such items as the rental paid, the sanitary arrangements of the dwellings, and the relative sizes of dwellings and households.

Rental and sanitation.

The lowest median rental, \$5.83 per month, was found among the Polish families; the highest, \$13.25 per month, among the English and Celtic.⁵⁴ In the three other groups it ran from \$8.42 among the Italian families to \$11.83 among the native white families. Three hundred and fifty babies, or 5 per cent of those living in dwellings for which cash rent of a known amount was paid, were in dwellings rented at less than \$5 a month. The proportion rose to 39 per cent among the Poles and dropped to 2 per cent among the Jews and the Negroes.

⁵⁴ The Lithuanians paid a rental slightly higher than the Poles, and the English and Celtic paid a rental slightly higher than the Negroes. For all other housing items these two nationalities are included in the group of "all other foreign," and this group, as a whole, paid a rental lower than the negroes and higher than the Poles.

The 350 dwellings rented at less than \$5 a month were scattered throughout the city. At least 1 was reported for every ward, but only in seven wards were there as many as 10 such dwellings. Almost three-fourths were in wards 1, 2, and 3, and in these wards they formed a considerable percentage of all the dwellings.

Taking the city as a whole, one-half of all the families studied reported a rental of less than \$15 a month.

Differences in rental usually reflect a difference in economic status, but a comparison of the median rental with the median earnings of the fathers in each of the color and nationality groups reveals two variations: Among the Negroes, the group with the lowest earnings, is found next to the highest median rental, amounting to 33 per cent of their median earnings; among the Poles, with earnings lower than any other group except the Lithuanians, Italians, and Negroes, was found a median rental so low that it amounted to only 13 per cent of their median earnings. The native white families, the Jewish families, and the Italians were paying in median rental 18 per cent, 17 per cent, and 19 per cent, respectively, of their median earnings.⁵⁵

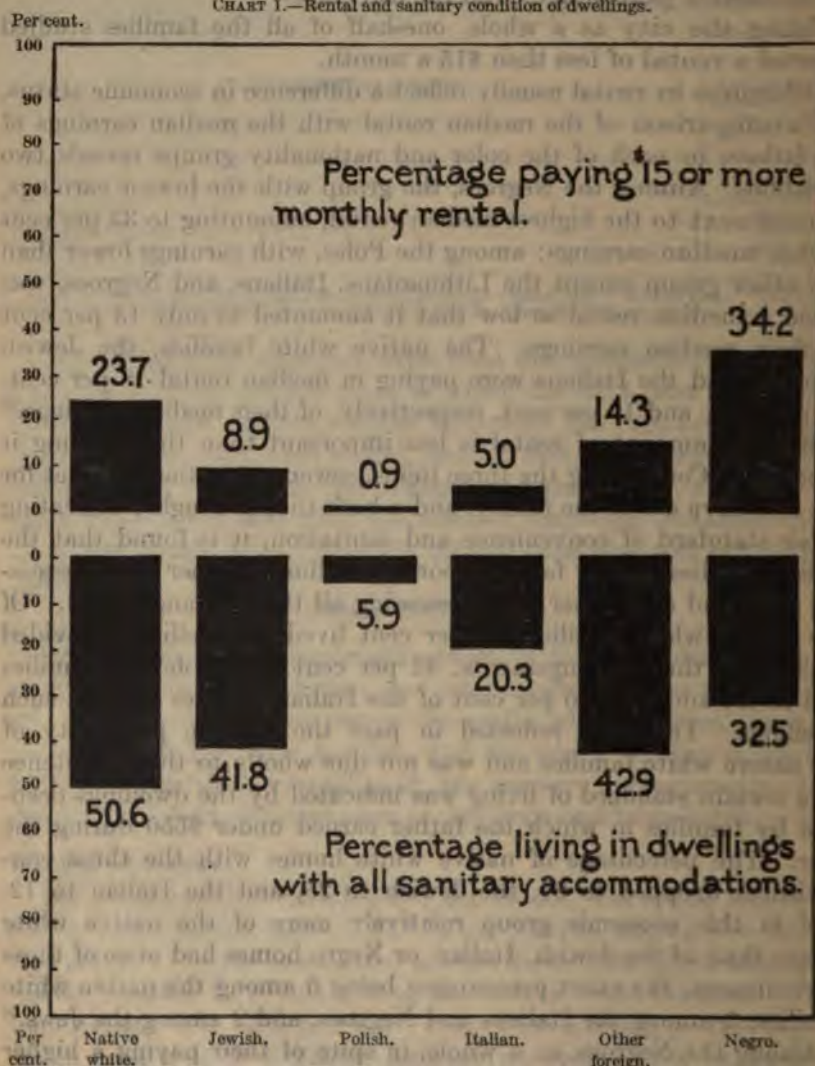
But the amount of rental is less important than the dwelling it procures. Considering the three items, sewer connection, a toilet for the exclusive use of the family, and a bath tub, as roughly indicating a fair standard of convenience and sanitation, it is found that the Polish families had by far the poorest dwellings, 12 per cent possessing none and only 6 per cent possessing all these arrangements. Of the native white families, 51 per cent lived in dwellings provided with these three arrangements, 42 per cent of the Jewish families had them, and only 20 per cent of the Italian families lived in such dwellings. That this reflected in part the relative prosperity of the native white families and was not due wholly to their insistence on a certain standard of living was indicated by the dwellings occupied by families in which the father earned under \$650 during the year. The percentage of native white homes with the three conveniences dropped to 29, the Jewish to 25, and the Italian to 12. And in this economic group relatively more of the native white homes than of the Jewish, Italian, or Negro homes had none of these conveniences, the exact percentages being 6 among the native white families, 3 among the Italians and Negroes, and 2 among the Jews.⁵⁶

Among the Negroes, as a whole, in spite of their paying a higher median rental than any other group except the English and Celtic, the percentage of dwellings provided with the three stated sanitary arrangements was lower than among the native white or the Jewish families. It has been commonly believed that a negro tenant pays more than a white tenant for similar accommodations. These find-

⁵⁵ See Tables 31, 32, and 33, Appendix VII, pp. 245 and 246. ⁵⁶ See Table 34, Appendix VII, p. 247.

ings confirm this belief so far as the city of Baltimore is concerned. Among the native white families living in rented dwellings, 24 per cent paid \$15 or more per month, and 51 per cent of all native white families lived in dwellings having bathtub, sewer connection, and a

CHART I.—Rental and sanitary condition of dwellings.



toilet for the exclusive use of the family; among the negro families 34 per cent of those living in rented dwellings paid \$15 or more per month, but only 33 per cent of all the negro families lived in dwellings provided with these arrangements.⁵⁷

⁵⁷ See Tables 31 and 34, Appendix VII, pp. 245 and 247.

Space and size of household.

So far as space is concerned, the native white families, as the most prosperous, fared better than any others. In actual number of rooms per dwelling, the median negro home, with six rooms, was the same as the median dwelling among native white families, but the median negro household numbered six persons, and the median native white household numbered only four persons, so the margin of space in negro homes was considerably less than in the native white homes. More cramped than either of these groups were the households of the foreign born, where the median dwelling of four rooms accommodated a median household of four persons. (The kitchen was counted as a room, but the bathroom was not.)

Within the foreign group itself, variations were found both in the size of the dwelling and in the number of persons it accommodated. The medians in the Jewish families were the same as those for the entire foreign group; in the Italian families the number of rooms was the same but the median household numbered five instead of four. The Polish families had the smallest and most congested dwellings, with a median of three rooms and four persons. The "other foreign"—including the German, Bohemian, English and Celtic, and all other families—reported the same median space in their dwellings as the native white families—six rooms and four persons.

Further analysis shows that the percentage of families who reported one or more persons per room, exclusive of the baby born during 1915, ranged from 36 per cent among the native white families to 89 per cent among the Polish families. The Italians stood nearest to the Polish in their room congestion, with 72 per cent reporting one or more persons per room; then the Jewish families with 63 per cent, the Negroes with 54 per cent, and the group of "other foreign" with 49 per cent.

Thirty-one per cent of the babies in Polish families were housed in dwellings with two or more persons per room; among the Italians 14 per cent, and among the Jewish families 9 per cent, were housed in such congested quarters.

In each group, the percentage of families reporting one or more persons per room increased with the size of the household, but it was not only large households that had no margin of space. The households of four persons or less showed similar variations in the native white, the foreign white, and the negro families—18 per cent of such native white families, 31 per cent of such negro families, and 50 per cent of such foreign families were living one or more persons per room. And for each size of household, there were markedly higher percentages reporting two or more persons per room among the foreign families, and especially among the Poles, than among other groups.

In each race and nativity group room congestion was greatest in the poorest households; but, again, at each economic level the native white and the negro families had relatively more rooms in their dwellings than the foreign families.⁵⁸

Variations in size of family.

Closely related to the variations in the size of household are the variations in the numbers of children born to the mothers of the several nationalities. But they do not correspond exactly, because of differences in the stillbirth and infant mortality rates, and differences in custom regarding the presence in the household of relatives and lodgers. Thus the Polish and Italian mothers reported on the average more births and (in spite of high mortality among the Polish) more children surviving the first year of life than any other nationality. But the average households of the Jewish, the Polish, and the "other foreign" groups were approximately the same; and of all the foreign born, only the Italians with their high percentage of families keeping lodgers showed a definitely larger average household.⁵⁹ The negro mothers also reported a large average number of births but relatively fewer children surviving their first year. The negro households, however, were larger, on the average, than any others.

TABLE IX.—*Size of family by nationality of mother; births¹ in 1915.*

Color and nationality of mother.	Average number of births ¹ to mother. ²	Average number of children surviving 1 year. ³	Average number of persons per dwelling. ⁴
Native white.....	3.08	2.48	4.48
Foreign-born white.....	4.11	3.36	4.77
Jewish.....	3.89	3.25	4.70
Polish.....	4.51	3.54	4.66
Italian.....	4.35	3.49	5.19
All other.....	3.39	3.18	4.73
Colored.....	4.13	2.88	5.70

¹ Includes miscarriages.

² Including 1915 birth. Average derived from Table 70, Appendix VII, p. 231.

³ Excluding 1915 infant, but including parents. Average derived from data shown in Table 35, Appendix VII, p. 248.

Analyzing the average number of births to the mothers, the extent to which the groups vary from one another is more clearly seen. The number of mothers who had borne seven or more children ranged from 10 per cent of all in the native white group to 26 per cent of all in the Polish group.

⁵⁸ See Tables 35, 36, and 37, Appendix VII, pp. 248 to 252.

⁵⁹ Two nationality groups—the Lithuanians and the small unclassified group of "all other foreign" made up mainly of immigrants who had recently arrived from southeastern Europe—showed a higher percentage of families keeping lodgers than the Italian showed. But the housing data for these two groups with 191 infants have not been separately analyzed. In comparison with every other group the Italians had the highest percentages keeping any lodgers (18.3 per cent) or keeping 3 or more lodgers (4.8 per cent). See Table 40, Appendix VII, p. 254.

The mothers in the poorest families bore more children than the prosperous mothers. This difference was more marked among the native white mothers, who had an average of 3.1 children in families in which the fathers earned less than \$550 a year and 2.5 in families in which the fathers earned \$1,250 or over, than among the foreign-born mothers, who had an average of 4 children in families having earnings of less than \$550 a year and 3.8 in families having earnings of \$1,250 or over.⁶⁰

Associated with this question of the size of the family is a variation in the length of the interval between births. From the three sets of data on this point included in the tabulations, it appears that the average interval between births was shorter in the poorer families than in the well-to-do, and shorter among the colored families than among native white families of the same economic level. The Polish and Italian mothers—the groups with the largest families—seem to have had the shortest interval and the Jewish mothers the longest interval between births. But it appears also that the intervals between the first birth and the second and between the second birth and the third tended to be somewhat shorter than those between births later than the third, except that the intervals between births in very large families (of 10 or more) were the shortest of all.⁶¹

EMPLOYMENT OF MOTHERS.

In Baltimore, as in other cities studied by the Children's Bureau, it was mainly the wives of men whose earnings were insufficient for the family's needs who were gainfully employed away from home during the critical time of pregnancy or the normal nursing period. Tracing the mother's record back for the entire period of her marriage, as the Baltimore tabulations for the first time allow, it is found that for the large number of women who had worked away from home at some time after marriage the same relation holds: The lower the earnings⁶² of the men, the higher the proportion of women going out to work.

⁶⁰ Considering live births, stillbirths, and miscarriages, the averages in the native white families were 5 under \$550 and 2.8 at \$1,250 or over and in the foreign white families 4.7 under \$550 and 4.1 at \$1,250 or over. See Tables 38 and 39, Appendix VII, p. 253.

⁶¹ See Tables 41, 156, 157, and 165, Appendix VII, pp. 254, 351, and 357.

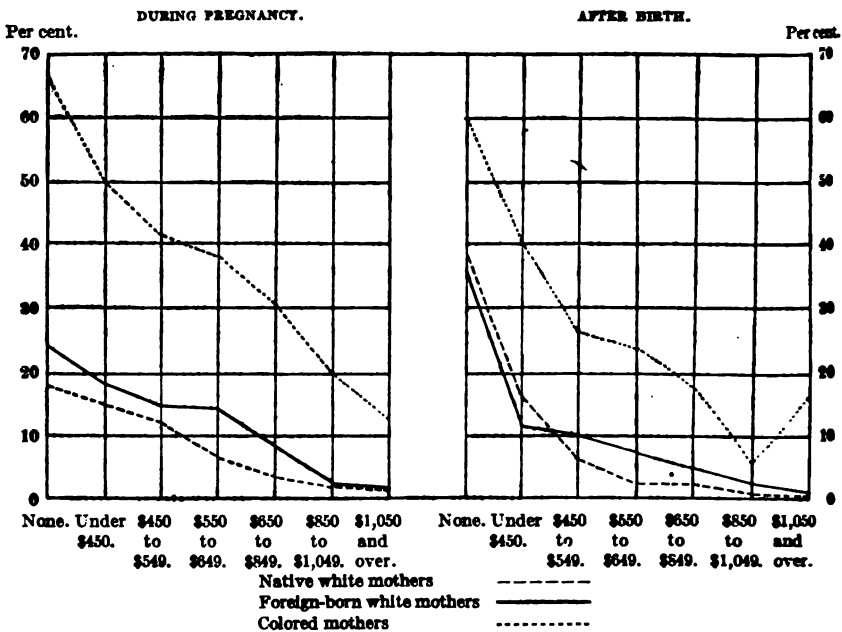
⁶² This statement is based on the assumption that, in general, the earnings of the father during the year following the birth of a baby in 1915 correctly indicate the family's economic status in previous years also.

TABLE X.—*Employment of mother away from home, by earnings of father and color and nativity of mother; births¹ in 1915.*

Earnings of father.	Per cent ² of mothers employed away from home during pregnancy.		
	Native white mothers.	Foreign-born white mothers.	Colored mothers.
Total.....	5.5	11.4	41.9
Under \$450.....	15.5	18.5	51.1
\$450-\$549.....	12.5	14.6	41.1
\$550-\$649.....	7.6	14.7	31.1
\$650-\$849.....	4.1	7.8	31.1
\$850-\$1,049.....	2.0	2.8	.....
\$1,050-\$1,249.....	1.2	2.9	.....
\$1,250 and over.....	1.1	.9	.....
No earnings.....	20.4	24.5	61.1

¹ Includes miscarriages.² Based on births, including miscarriages. Not shown where base is less than 50.

CHART II.—Per cent of mothers gainfully employed away from home, by fathers' earnings.

**Prevalence of employment.**

Relatively more colored women than white women, and relatively more foreign-born women than native women, worked outside their homes. But in each of these three groups separately it is found that in descending the scale of fathers' earnings, there was a steady increase in the percentage of mothers gainfully employed away from home at any time after marriage, or during the pregnancy of 1915, or during the first 12 months of the baby's life time.⁶³

⁶³ For detailed tabulation see Table 92, Appendix VII, p. 295.

Another indication of the economic pressure that is usually present when married women go to work outside their homes is given by the fact that the percentage of women reporting such employment rose steadily with the number of children in the family. At each economic level within each of the three race and nativity groups, the percentage of mothers who had worked outside their homes since their marriage was higher among those who had borne seven or more children than among others. And in families where the father earned less than \$850, the percentage of mothers who had worked outside their homes since marriage was higher among those who had borne from four to six children than among those who had borne less than four.⁶⁴

TABLE XI.—*Time of employment of mother away from home; live births in 1915.*

Time of employment of mother.	Live births.	
	Number.	Per cent distribution. ¹
Total.....	10,797	100.0
Mothers never gainfully employed away from home.....	2,284	21.1
Mothers gainfully employed away from home.....	8,507	78.8
Before marriage only.....	6,011	55.7
After marriage but only prior to pregnancy of 1915.....	945	8.8
During pregnancy of 1915 or within 12 months after infant's birth.....	1,551	14.4
Mothers for whom employment was not reported.....	6	.....

¹ Not shown when less than one-tenth of 1 per cent.

In all, 8,507 live-born babies, or 79 per cent of those studied, were born to mothers who had been at some time gainfully employed outside their homes. Over one-half of all the mothers had gone out to work before they were 16 years old, and over one-fourth before they were 14. But many of these mothers had had no outside employment after marriage, and others did not go out to work during the pregnancy of 1915 nor within 12 months after the birth of a baby in that year.

Of the 10,797 babies studied, 1,229, or 11 per cent, were born to mothers who worked outside their homes during pregnancy; more than one-half of these mothers resumed work outside the home after the baby's birth—594 during the baby's lifetime and 104 after the baby's death. The mothers of 322 babies, or 3 per cent of all, went out to work within 12 months of the baby's birth, although they had not been so employed during pregnancy—261 during the baby's lifetime, and 61 after the baby's death.⁶⁵ All but 22 of these 322 mothers had been gainfully employed away from home at some previous time.

⁶⁴ See Table 94, Appendix VII, p. 296.

Occupations.

The white mothers working away from home were mainly factory operatives; the negro mothers were mainly domestic servants, charwomen, and laundresses.⁶⁶

TABLE XII.—*Occupation of mother, by color; births in 1915 to mothers employed away from home during pregnancy.*¹

Occupation of mother during 1915 pregnancy.	Births to mothers employed away from home.		Occupation of mother during 1915 pregnancy.	Births to mothers employed away from home.	
	White.	Colored.		White.	Colored.
All.....	688	629	Charwork, laundering, etc....	49	38
Factory operatives:			Domestic service.....	22	38
Canning, shucking.....	315	6	Other occupations.....	82	8
Clothing.....	99	23			
Other factory.....	121	12			

¹ The statements that follow in text are based on births, Table 96, Appendix VII, p. 300.

Among the cannery workers Polish women predominated, and almost one-third were native white women; the other cannery workers, a very small number in all, represented every nationality group except the Jewish.

Approximately two-fifths of the clothing workers were native white women and the remainder were about evenly divided among the Negroes, the Lithuanians, and a scattered group representing every nationality except the English and Celtic.

Of the workers in "other factories," four-fifths were native white women.

These numbers represent widely varying percentages of mothers employed away from home in the several race and nationality groups, as custom and economic status within the group sent more mothers or fewer out to work. At one extreme, with the largest numbers going out to work, were the Negroes and Poles; at the other extreme, the Jewish and Italian women.

Of the native white mothers, 14 per cent had worked away from home after marriage, 6 per cent during their pregnancy of 1915, and 4 per cent during the first 12 months of the infant's life. Among the Jewish mothers, these percentages dropped to 7 per cent, 1 per cent, and less than 1 per cent; among the Negroes they rose to 67 per cent, 45 per cent, and 32 per cent.⁶⁷

For the period of the 1915 pregnancy and the 12 months after the birth of a baby in that year, the gainful employment of mothers within their own homes has also been tabulated. Except among

⁶⁶ See Table 101, Appendix VII, p. 303. ⁶⁷ See Tables 96, 97, and 98, Appendix VII, pp. 297-300.

the Poles and the Negroes, more mothers worked at home than away from home. And considering together employment at home and away it is found that the native white mothers, instead of the Jewish mothers, reported the least employment during the pregnancy of 1915. The percentage employed among the Jews rose to a point just above the average for the city, and among the Italians considerably higher. The Negroes and Poles still headed the list with the highest proportions of mothers gainfully employed.⁶⁸

Relatively few mothers reported doing "home work" given out by a factory. The 174 mothers⁶⁹ (just 2 per cent of all) who reported having sewed at home on work given out by a factory during the 1915 pregnancy were Italians (69), native white women (37), Poles (22), Lithuanians (17), Jews (15), and others (14). Only among the Italians and the Lithuanians did these numbers represent more than 4 per cent of the mothers, but here they rose to 16 per cent of all. Of the 124 mothers employed at "other home work," 3 mothers—native white—were working for a factory and 12 were probably doing factory work. These 12 included 2 Italian mothers making lace and embroidering, one Jewish mother "making crab cakes at home," one colored mother mending feed bags, and 8 native white mothers making Christmas ornaments, flowers, brushes, etc.

The principal home occupations among the white mothers were keeping lodgers and helping in the husband's business; among the negro mothers, laundering.

TABLE XIII.—Occupation of mother, by color; births in 1915 to mothers employed at home during pregnancy.

Occupation of mother during 1915 pregnancy.	Births to mothers employed at home.		Occupation of mother during 1915 pregnancy.	Births to mothers employed at home.	
	White mothers.	Colored mothers.		White mothers.	Colored mothers.
All occupations.	1,397	355	Sewing (not for factory).	55	22
Keeping lodgers.	670	46	Laundering.	68	269
Sewing (for factory).	167	1	Helping in husband's business.	333	3
			Doing other home work.	104	14

Keeping lodgers was most prevalent among four of the foreign groups. In the small mixed group of "other foreign," 19 per cent of the mothers were so engaged; of the English and Celtic mothers, 15 per cent; and of the Lithuanian mothers and the Italian mothers, 14 per cent. But these groups were small, and together they reported only 115 of the 732 mothers who kept lodgers. In actual numbers, the

⁶⁸ See Tables 92 and 93, Appendix VII, pp. 295 and 296.

⁶⁹ See Table 100, Appendix VII, p. 302.

* Births. Table 98, Appendix VII, p. 300.

native white mothers led, with 422 keeping lodgers—a large number but a small percentage (6 per cent) of the total number of native white mothers. The other 195 mothers keeping lodgers were scattered among the other nationalities, with percentages in each group varying from 3 per cent of the Negro mothers to 9 per cent of the German mothers.

Helping the husband's business was the chief occupation reported by Jewish mothers, of whom 163, or 16 per cent, were so engaged. These Jewish mothers and 107 native white mothers constituted more than three-fourths of all the women helping in the husband's business. Both actually and relatively the numbers were small in the other groups, ranging from less than 1 per cent of the negroes to 10 per cent of the mixed group of "other foreign."

CHART III.—Per cent of mothers gainfully employed at home and away from home, by color and nativity.



It has been noted that fewer mothers were employed outside their homes after the birth of the baby than during the pregnancy of 1915. This decrease accompanies an increase in the number gainfully employed within their homes. Even omitting from consideration the mothers who resumed or began work only after the death of the baby born in 1915, this increase in work at home persists.⁷⁹

TABLE XIV.—Time and place of employment of mother; live births in 1915 to mothers employed.

Place of employment.	Live births to mothers employed.		
	During pregnancy.	Within the first year after birth.	
		At any time.	During lifetime of infant.
Total.....	2,911	3,035	2,784
Employed away from home.....	1,229	1,020	835
Employed at home.....	1,682	2,015	1,949

⁷⁹ For details of shifting from employment to nonemployment and from employment away to employment at home and vice versa, see Table 101, Appendix VII, p. 303.

In each nationality without exception⁷¹ this change in the distribution of working mothers is found—relatively more working at home and relatively fewer working away during the lifetime of the infant than during pregnancy. Among the Negroes and the Poles, however, in spite of this increase in employment at home, work away continued to be more prevalent than work at home.

Whether the mother works at home or away is a matter of great importance to her baby's welfare.

From the infant mortality rates, which will be discussed in detail in a later section,⁷² it appears that the work away from home increased the hazard to the baby, while work at home, so far as the Baltimore figures show, was accompanied by no excess in the infant mortality rate. Whether the mother at home regulated her own conditions of work so that strain during pregnancy was avoided, and ill effects were not too serious to be outweighed by the benefit of addition to the family income, is an open question. It does appear that the mothers who worked at home breast fed their babies to about the same extent as mothers at the same economic level who were not gainfully employed.

The high percentage of Negro mothers and Polish mothers employed away from home and the very low percentages of Jewish and Italian mothers so employed may reasonably be considered one factor in the high infant mortality rates among Negro and Polish babies and the low infant mortality rates among Jewish and Italian babies.

CARE OF THE INFANT.

Prevalence of artificial feeding.

One baby in 11 was deprived of breast milk during the first month of life; 1 baby in 5 had been weaned before the end of the third month; and by the ninth month, 1 baby in 3 was having only artificial food.

Behind these average percentages for all babies born in 1915 were certain marked variations among the several groups. More babies were artificially fed in the prosperous families than among the less well-to-do, and more babies were artificially fed in the native white families than in the foreign-born white or the negro families.

On the other hand, mixed feeding—that is, the supplementing of the mother's milk with cow's milk or other food—was less common during the early months of infancy among the native white families than elsewhere. But even with the relatively high percentages of babies mixed fed in the other groups, there were also higher percentages having only breast feeding among the babies of foreign-born white mothers than among the babies of native white mothers and, omitting

⁷¹ Native white, Negro, Jewish, Polish, Italian, and all other foreign (German, Bohemian, English and Celtic, Lithuanian, and "other foreign" combined).

⁷² See page 114.

the babies of mothers gainfully employed, higher percentages having only breast feeding among the babies of colored mothers than among the babies of native white mothers. These comparisons hold true not only for the several groups as a whole, but also for native white, foreign-born white, and colored families of the same economic level.

The feeding was tabulated separately for the three largest foreign-born groups. The Polish and Italian babies showed approximately the same distribution among the three types of feeding, with a slight difference in favor of the Italian babies. Among the babies of Jewish mothers, on the other hand, during the third month and later, the percentages having mixed feeding were markedly high. As compared with the Polish babies, the Jewish babies showed slightly less artificial feeding at the first, third, and sixth months of life and markedly less breast feeding during the sixth month and later. As compared with the Italian babies, the Jewish babies showed practically no difference in the extent of artificial feeding, but markedly less breast feeding from the third month onward.⁷³

It is worth noting that the Italian and Polish mothers who had learned to speak English were more likely to wean their babies during the early months than the Italian and Polish mothers who had not learned to speak English, while exactly the reverse was true of the Jewish mothers. And more of the Polish mothers who could read and write than of the illiterate Polish mothers were weaning their babies during the early months, while among the Italian mothers as well as the Jewish mothers there was less artificial feeding when the mothers could read and write than when they were illiterate.

Among the native mothers, both white and colored, the illiterate women were less likely than the others to give their babies breast milk and no other food during the early months. In both groups the illiterate mothers showed a high percentage of babies whose nursing by their mothers was supplemented by other food. And among the illiterate native white mothers the percentage of babies weaned in the early months was also above the average.⁷⁴

Within each race and nationality group the greatest prevalence of artificial feeding occurred in families where the mother was gainfully employed away from home.⁷⁵

SUMMARY.

The Baltimore group included considerable numbers of colored births and of births to foreign-born Jewish, Polish, and Italian mothers. Other foreign groups were also represented, but their numbers were too few to permit a separate detailed analysis.

⁷³ See Tables 42, 80, and 81, Appendix VII, pp. 255, 288, and 289.

⁷⁴ See Tables 43, 44, and 45, Appendix VII, pp. 255 and 256.

⁷⁵ See Table 46, Appendix VII, p. 257. The relation of the mother's employment to her way of feeding her baby is discussed in detail in the section on Employment of Mothers and Infant Mortality, p. 124.

Artificial feeding of young babies, poverty, poor housing, and employment of mothers away from home are four important factors in infant mortality the relation of which to mortality rates will be discussed in detail in the later sections of the report.

In Baltimore artificial feeding was more prevalent among the native white mothers than among the foreign-born mothers or the colored mothers. It was more prevalent among the well-to-do than among the very poor white mothers, although it was greatly increased in certain poor groups by the mothers' employment away from home. Except among the foreign-born Jewish families, the foreign-born mother who spoke English was more likely to wean her baby during the early months than the foreign-born mother who spoke no English. In spite of the relatively high percentage of mothers employed in the Polish group there was no marked difference in the prevalence of artificial feeding among the Poles, the Italians, and the foreign-born Jewish mothers when these groups are considered as a whole.

Almost two-thirds of the births studied were in families where the fathers earned less than \$850 a year. Four per cent were in families where the fathers earned \$1,850 or over. Economic conditions were worst among the colored families. These fathers were employed mainly in unskilled and poorly paid occupations and their annual earnings were lower than the earnings of white fathers in similar kinds of work. On the other hand, the colored families paid higher rentals than white families for houses with corresponding type of sanitation. In the colored group the median rental was approximately one-third of the median earnings of the fathers; in the white groups it was less than one-fifth.

The foreign-born fathers also earned less than the native white fathers, because of difference in type of occupation and lower earnings from similar types of occupations. But no foreign-born group (except the small group of Lithuanians) was so poor as the colored group.

The foreign-born families lived in poorer dwellings and had greater room congestion than the native white families. But when native and foreign-born families of corresponding economic levels are compared, it appears that the foreign-born families had approximately the same sanitary equipment as native white families with similar earnings. The greatest room congestion and the lowest rentals were found in the Polish group.

More than one-fifth of the families lived in dwellings without sewer connections, and a considerable number of these were in wards with no outlying, thinly settled districts. The percentage of dwellings having no sewer connection was higher in the seventeenth

and eighteenth wards than in any other ward with no outlying district.

About one mother in seven worked away from home during pregnancy or during the lifetime of the baby within 12 months after the birth. Such employment was most prevalent among the Negro and Polish mothers and in these groups 45 per cent and 33 per cent, respectively, worked away from home during pregnancy. In every group the percentage of mothers employed away was greatest in the poorest families and decreased steadily with increase in the fathers' earnings. The principal occupation among white mothers employed away from home was factory work—chiefly in canneries for the Poles, and for others chiefly in clothing factories. Domestic service was the principal occupation among colored mothers.

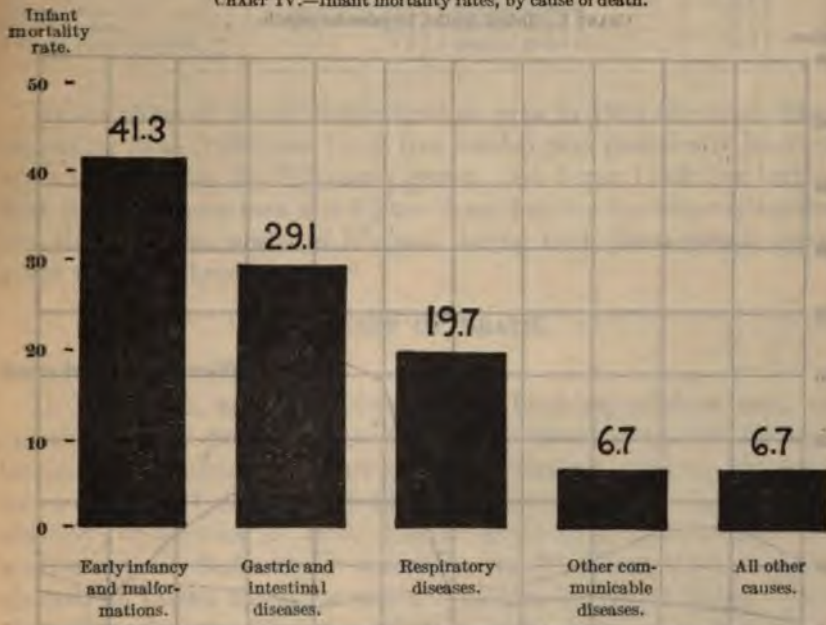
The interplay of these social conditions in relation to variations in the infant mortality rates in the several groups offers the main subject for the following sections. Even this brief survey of the field suggests certain reasons for the excessive mortality among babies of Polish mothers and babies of colored mothers.

THE DEATHS.

Of the 10,797 live-born babies in the normal Baltimore group, 1,117, or approximately 1 in 10, died during the first year of life; 477 died during the first month, 337 between the second month and the sixth, and 303 between the seventh month and the twelfth.

Seven-eighths of all the deaths were ascribed to the three main

CHART IV.—Infant mortality rates, by cause of death.



groups of infant diseases, and the total infant mortality rate, 103.5 per 1,000 live births, is made up as follows:

TABLE I.—*Infant mortality rates, by cause of death; live births in 1915.*¹

Cause of death.	Infant mortality rate.	Cause of death.	Infant mortality rate.
All causes.....	103.5	Early infancy.....	37.7
Gastric and intestinal diseases.....	29.1	Epidemic and other communicable diseases.....	6.7
Respiratory diseases.....	19.7	All other causes.....	6.7
Malformations.....	3.6		

¹ For detailed tabulation, see Table 48, Appendix VII, p. 258.

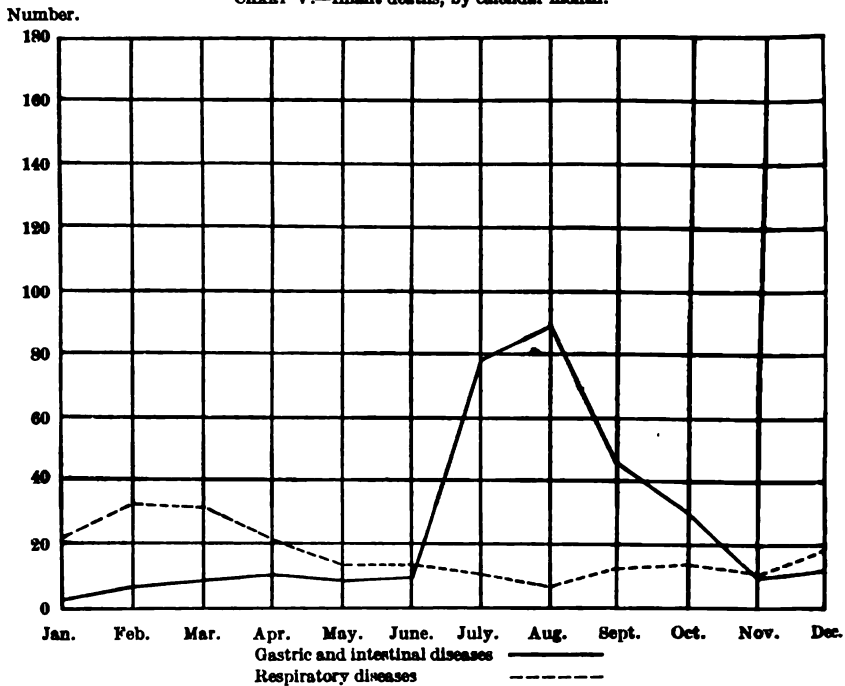
More babies died during the hot months from July to September and during the month of March than at any other season. Omitting the seasonal deaths (from gastric and intestinal diseases and from

respiratory diseases), it is found that in March there were 71 deaths from other causes, while in the other months the number of deaths from other causes ranged from 56 in April to 39 in January.

AGE AT DEATH.

In the Baltimore group, as in the death-registration area of the United States and in the cities of the birth-registration area, slightly over two-fifths of all infant deaths occurred in the first month of life. Roughly, one may say that in Baltimore of every 1,000 babies

CHART V.—Infant deaths, by calendar month.



born alive, 103 died during the first year; 56 died during the first three months (37 of these failed to survive the first two weeks); 19 died during the fourth, fifth, or sixth month; 15, during the seventh, eighth, or ninth month, and 13, during the last three months of the first year. A glance at the deaths by single months reveals the fact that although, in general, the number of deaths decreased month by month, more babies died in the fifth month and in the sixth month than in the second, third, or fourth. In the seventh month the number of deaths was strikingly less than in any preceding month.⁷⁰

⁷⁰ See Table 50, Appendix VII, p. 200.

TABLE II.—Deaths per 1,000 live births, by age at death; comparison of Baltimore and cities in the birth-registration area.

Age at death.	Deaths per 1,000 live births.		Age at death.	Deaths per 1,000 live births.	
	Balti- more.	Cities in the birth- registra- tion area (1915).		Balti- more.	Cities in the birth- registra- tion area (1915).
Total.....	103.5	103.3	1 month, under 2.....	6.0	9.2
Under 3 months.....	56.0	60.4	2 months, under 3.....	5.8	7.8
Under 2 weeks.....	37.0	35.4	3 months, under 6.....	19.4	18.1
Under 1 week, under 1 month.....	7.1	8.0	6 months, under 9.....	15.1	14.0
			9 months, under 12.....	13.0	10.9

In the cities of the birth-registration area in 1915 the total infant mortality rate (103.3 per 1,000 live births) was practically identical with the rate for the Baltimore group (103.5 per 1,000 live births). But the Baltimore rate was higher than that for the other cities during the first two weeks of life and during each three-month period after the first three months.⁷⁷

CAUSES OF DEATH.

Early infancy and malformations.

In Baltimore, as in the cities of the birth-registration area, the causes of death peculiar to early infancy were responsible for more babies' deaths than any other group of diseases. Among the Baltimore babies 407 deaths were assigned to premature birth, congenital debility, or injuries at birth, and in addition 39 babies born with malformations died early in their first year.⁷⁸ These causes together showed an infant mortality rate of 41.3 per 1,000 live births. More than three-fourths (78.5 per cent) of these deaths occurred within 2 weeks of birth, many of them within 24 hours; 40 deaths assigned to early infancy or malformations, or 9 per cent of all deaths from these causes, occurred after the second month. The deaths after the second month included none of those due to injuries at birth, and

⁷⁷ For detailed tabulation see Table 47, Appendix VII, p. 257.

⁷⁸ So far as information could be secured, a list of defects of infants born alive is shown in the following tabular statement:

Nature of defect.	Number.	Rate per 1,000 live births.	Nature of defect.	Number.	Rate per 1,000 live births.
Cleft palate.....	6	0.6	Imperfectly developed head..	7	0.6
Harelip.....	9	.8	Spina bifida.....	4	.4
Additional finger or toe.....	13	1.2	Monster.....	2	.2
Missing finger or toe.....	3	.3	Lack of opening of rectum.....	1	.1
Club foot.....	3	.3	Congenital disease of heart.....	38	3.5
Paralysis of limb.....	1	.1	Blind.....	1	.1
Hydrocephalus.....	4	.4			

only 2 of those due to prematurity. But 9 of the 39 babies who died from malformations and 29 of the 138 who died from congenital debility had struggled safely through the first two months and died later in the year.⁷⁹

The death rate from malformations (3.6 per 1,000) was lower than the corresponding rate (6.1 per 1,000) in the cities of the birth-registration area. For the causes peculiar to early infancy the Baltimore rate was higher than that in the birth-registration cities. Even omitting from the Baltimore group the colored babies with their specially high death rate from these diseases, the Baltimore rate was still somewhat above the rate for the other cities.

TABLE III.—*Infant mortality rates from causes peculiar to early infancy, by color and nativity of mother; comparison of Baltimore and cities of the birth-registration area (1915).*

Color and nativity of mother, and area.	Live births.	Infant mortality rate from early infancy.
Cities of birth-registration area (1915).....	1 481,496	35.0
Baltimore study.....	10,797	37.7
White mothers.....	9,492	36.0
Native.....	6,730	28.1
Foreign-born.....	2,753	39.9
Colored mothers.....	1,305	41.5

¹ Includes 471,144 white and 10,352 colored infants. U. S. Bureau of the Census, Birth Statistics, 1915. First annual report, p. 10.

Only for the babies of foreign-born mothers did the Baltimore rate from early infancy drop below that for all the cities of the birth-registration area combined.

The deaths from causes peculiar to early infancy were more evenly distributed through the different seasons than deaths from gastric and intestinal diseases or deaths from respiratory diseases; and yet in the Baltimore group it was found that more babies died from causes peculiar to early infancy in March, April, and November than in other months and noticeably few in January. The variations in the numbers of births occurring in the several months do not account for these differences, for the infant mortality rate from this group of causes was exceptionally high among babies born in March, April, or November and exceptionally low among babies born in January.⁸⁰ In discussing these diseases, Dr. Grace L. Meigs says:

"No more than a guess can be made as to the degree to which these diseases can be prevented. * * * Two problems are here involved: (1) The ignorance of the prospective mother in the care of

⁷⁹ See Table 50, Appendix VII, p. 260.

⁸⁰ See Tables 52 and 53, Appendix VII, pp. 262 and 263.

herself during pregnancy; (2) improper care by physician and midwife during pregnancy and at birth.⁸¹

The present study will show the extent to which in the Baltimore group the death rate from causes peculiar to early infancy varied not only with the color and nativity of the mother, but also with the family's means, with the work the mother did, and the number of children she had borne.

Gastric and intestinal diseases.

Second in importance as a cause of death were the diarrheal diseases, from which 308 babies in the Baltimore families died under 1 year of age. The six deaths from diseases of the stomach were included with these in the group of gastric and intestinal diseases, and the combined infant mortality rate was 29.1 per 1,000 live births. In the deaths from these causes there was the least variation in rates between the native, foreign-born, and colored groups as a whole.⁸² Each of the three in the Baltimore study showed a rate somewhat higher than the rate in the cities of the birth-registration area.

Color and nativity of mother, and area.	Infant mortality rate from gastric and intestinal diseases.
Cities of birth-registration area (1915).....	26.6
Baltimore study.....	29.1
Native white mothers.....	28.8
Foreign-born white mothers.....	29.1
Colored mothers.....	30.7

These deaths occurred at every month of age within the first year of life. The hazard was less during the first two months than later and for these early months the rate in the Baltimore group was below the rate in the cities of the birth-registration area. The monthly death rate from gastric and intestinal diseases, in the Baltimore group reached its maximum during the sixth month. Or, if the four three-month periods of the first year of life are considered, the lowest infant mortality rate from gastric and intestinal diseases is found during the first quarter and the highest rate during the second quarter.⁸³ Quite different was the distribution of such infant deaths among all babies under 1 year of age in all cities of the birth-registration area during 1915. There the rate from gastric and intestinal diseases was highest during the first three months of life and decreased steadily and markedly through the remainder of the first year. For each age period except the first three months the Baltimore group had a higher rate than the babies in these other cities, and it may be noted that the highest rate reached by the Baltimore group

⁸¹ Grace L. Meigs, M. D.: Other Factors in Infant Mortality than the Milk Supply and Their Control, in *American Journal of Public Health*, Vol. VI, No. 8.

⁸² Table 49, Appendix VII, p. 259. Important variations in rate occur within the foreign group, which will be discussed in the comparison of the several nationalities. Compare page 78.

⁸³ See Tables 50 and 54, Appendix VII, pp. 260 and 264.

(during the second three months) was higher than the maximum reached in the other cities (during the first three months). A comparison with the death rate under 1 year from gastric and intestinal diseases in Baltimore City during the calendar year 1915 shows a distribution of deaths similar to that in the group studied in detail and unlike that in the cities of the birth-registration area.

Gastric and intestinal diseases are, of course, largely seasonal. Disregarding for a moment differences between the two summers, it appears that for the Baltimore group, while no calendar month was without infant deaths assigned to these diseases, the months from July to October had 243 such deaths, or 77.4 per cent of them all. August had the highest number of deaths, 89, and July followed with 78.⁸⁴

The summer of 1916, which was the period of special exposure for most of the older babies in the Baltimore group, was exceptionally dry,⁸⁵ and the city death records showed more deaths under 2 years of age from diarrhea and enteritis during 1916 than during 1915, when the younger babies in the Baltimore group were especially exposed to gastric and intestinal disorders. This might account for an exceptionally high percentage of such deaths occurring during the later months of life. It could have no bearing upon the high mortality during the months from the third to the sixth.

Deaths from these causes are considered the most immediately preventable of all infant deaths, since the disorders from which they result are directly related to wrong feeding and improper care. That these disorders are gradually being controlled and prevented throughout the country is indicated by the mortality statistics for the death-registration area.

The total number of infant deaths in the death registration States as of 1910 (exclusive of North Carolina) decreased from 135,020 in 1910 to 119,349 in 1917. There is no reason to assume a corresponding decrease in the annual number of births within the same area, since a possible decrease in birth rate would have been more than offset by an increase in population. Therefore, the shift in per cent distribution of deaths by cause of death indicates, primarily, a decrease in the mortality from the causes which show a decreasing percentage of the total infant deaths.

On the other hand, whether the mortality from causes which show an increasing percentage of the total deaths has actually increased or merely remained constant while the deaths from other causes have decreased can not be determined without a comparison of deaths and births.⁸⁶

⁸⁴ See Chart V, p. 58, and Table 52, Appendix VII, p. 262.

⁸⁵ See Table 56, Appendix VII, p. 264.

⁸⁶ A comparison of infant births and deaths is possible for the birth-registration area as of 1915, exclusive of Rhode Island. The infant mortality rate from gastric and intestinal diseases was 24.6 in 1915, 25.1 in 1916, and then fell to 23.4 in 1917, 23.2 in 1918, and 19.0 in 1919. Compiled from U. S. Bureau of the Census, Birth Statistics, 1915 to 1919.

TABLE IV.—Changes in per cent of infant deaths from certain causes in the death-registration area, as of 1910 (exclusive of North Carolina), 1910 to 1917.

Years.	Per cent of infant deaths from specified causes.			Years.	Per cent of infant deaths from specified causes.		
	Gastric and intestinal diseases.	Early infancy and malformations.	All other causes.		Gastric and intestinal diseases.	Early infancy and malformations.	All other causes.
1917.....	23.7	41.4	34.8	1913.....	26.1	39.8	34.2
1916.....	24.3	41.2	34.6	1912.....	25.3	39.5	35.0
1915.....	23.4	41.9	34.6	1911.....	27.0	37.1	35.7
1914.....	24.5	41.4	34.2	1910.....	30.6	30.7	38.7

(U. S. Bureau of the Census, Mortality Statistics, 1917, p. 64.)

Marked variations in the rates from gastric and intestinal diseases occurred within the native white group and among the several nationalities in the Baltimore study. How these variations were related to methods of feeding and to home conditions will be discussed in later sections of this report. The very low rates prevailing in certain groups tend to confirm the belief that these disorders can be largely prevented by breast feeding, and by good care and surroundings.

Respiratory diseases.

To the third important group of infant diseases—pneumonia, bronchitis, and broncho-pneumonia—were assigned 213 deaths among the Baltimore infants, an infant mortality rate of 19.7 per 1,000 live births. The hazard from these diseases persists throughout the first year of life, but the rate was highest (3.5) during the first month and decreased slightly as the year progressed. More than one-sixth of the babies who died of respiratory diseases were less than 1 month old, and more than three-fifths of them were less than 6 months old. In the cities of the birth-registration area there was a similar slight decrease in these deaths as babies grew older, but the proportions of the deaths from respiratory diseases occurring in the early months of age were not quite so high as in the Baltimore group. During each three-month period except the last the rate was higher in Baltimore than in the cities of the birth-registration area.⁸⁷

As in the deaths from gastric and intestinal diseases, there was a seasonal variation, but the greatest numbers of deaths from respiratory diseases were in February (33) and March (32), and the least were in August (7). The five calendar months, January, February, March, April, and December, had 129 such deaths, two and one-third times as many as the five months from July to November.

These deaths were very unevenly distributed among the different families studied. Relatively more than three times as many occurred

⁸⁷ See Table 47, Appendix VII, p. 257.

among the colored babies as among the white babies. Or, specifically, of the 1,305 babies born to colored mothers, 64 died from respiratory diseases—49 per 1,000 live births; of the 9,492 babies born to white mothers, 149 died from respiratory diseases—15.7 per 1,000 live births. Among the babies of foreign-born mothers the rate (20.7) was higher than among the babies of native white mothers. It should be mentioned that respiratory diseases are often complications of acute contagious diseases, especially of whooping cough and measles; and as shown later, whooping cough was more prevalent among colored than among white babies.⁸⁸

This element of the infant death rate has been considered difficult to touch; the definite attempt to reach it is the development of only the last few years. But, again, the low rates found in certain groups suggest that many of the deaths from respiratory diseases might be prevented.⁸⁹ Here, too, the chief weapons are improvement in the standard of living and the education of the mother. She must learn that breast milk and plenty of fresh air increase the baby's power of resistance; that the baby must not be exposed to infection from a person suffering from a cold; and that respiratory infections in the baby must receive early treatment.

Other communicable diseases.

About 1 in 15 of the infant deaths were ascribed to the other communicable diseases, which included whooping cough, with 18 deaths, tuberculosis, 15 deaths, and syphilis, 14 deaths. The other 25 deaths in this classification were scattered among several causes—measles 8, influenza 7, erysipelas 4, diphtheria and croup 4, and scarlet fever and dysentery each 1. Altogether these diseases showed an infant mortality rate of 6.7 per 1,000 live births, which was somewhat less than the corresponding rate (8.5 per 1,000) in cities in the birth-registration area in 1915.⁹⁰

The 14 deaths assigned to syphilis occurred in the earliest months of life—10 in the first month and only 1 after the third month.⁹¹ Deaths from this cause, like those assigned to early infancy, are directly related to the condition of the mother and the condition of the infant at birth. Their prevention depends directly upon the care and treatment of the mother during pregnancy and confinement.

⁸⁸ But if both causes are stated on the death certificate the death is ascribed to the epidemic rather than to the respiratory cause. See U. S. Bureau of the Census, *Manual of International Causes of Death*, pp. 18-20; also U. S. Bureau of the Census, *List of Joint Causes of Death*.

⁸⁹ A marked reduction in infant mortality from respiratory diseases in New Zealand during the past 15 years from 10 per 1,000 births in 1905-1909 to 4.6 in 1915-1918, has accompanied the development of infant-welfare work in that country.

⁹⁰ See Tables 47, 48, 49, and 50, Appendix VII, pp. 257 to 260.

⁹¹ In addition to these deaths assigned to syphilis, an unknown number due to syphilis or other venereal infection are probably included in the early deaths assigned to "prematurity," "congenital debility," "diseases ill defined and unknown," and other causes.

The deaths assigned to other communicable diseases increased in the later months of life, and 24, or almost two-fifths of all, occurred among babies more than 9 months old.⁹² Among babies from 6 to 12 months old the death rate was practically the same in the Baltimore group and in the cities of the birth-registration area for other communicable diseases.

While it is necessary to guard against using the rates for the group studied as true and complete for the city of Baltimore, it is found nevertheless that on this point the experience of the group was similar to that shown by all registered infant deaths in Baltimore during 1915 and 1916—low death rates for communicable diseases other than syphilis, with a diminishing difference between Baltimore and the other cities as babies passed from early infancy to the later months of their first year.

Variations in rates from these diseases were found within the Baltimore group. Except for the three diseases—whooping cough, tuberculosis, and syphilis—the total numbers of deaths were too small to justify analysis, and, even for these three causes, slight variations in rates would not be significant. But when it is found that the babies of colored mothers died from whooping cough at the rate of 5.4 per 1,000 live births and that this rate was 3 times as high as the rate (1.8) among babies of foreign-born white mothers and 6 times as high as the rate (0.9) among babies of native white mothers, it becomes apparent that this difference in rate reflects a real difference in conditions and care. Again, the rate from deaths assigned to syphilis was 11 times as high among babies of colored mothers (7.7 per 1,000) as among babies of foreign-born white mothers (0.7), and 26 times as high as the rate (0.3) among babies of native white mothers.⁹³

For tuberculosis the babies of foreign-born mothers had the most favorable rate (0.4 per 1,000). The colored babies had a rate (3.1 per 1,000) more than twice as high as the babies of native white mothers (1.4 per 1,000). This indication that relatively more colored babies than white babies died from tuberculosis was confirmed by the much

⁹² This can not be ascribed to the fact that measles and whooping cough were more prevalent in Baltimore during 1916 than during 1915. While 17 of the 26 babies in this group who died from one of these diseases had passed the sixth month of life, more than half the infant deaths from measles and whooping cough recorded for the year 1915 in the cities of the birth-registration area were in this same age period. See Table 50, Appendix VII, p. 260.

⁹³ This may in part reflect a difference in the extent to which deaths from syphilis were assigned to other causes in registering deaths of white persons and deaths of colored persons. It has been shown in other studies that venereal infection is more prevalent among the negroes in Baltimore than among the white population. J. Whitridge Williams: *The Limitations and Possibilities of Prenatal Care* based upon the study of 705 fetal deaths occurring in 10,000 consecutive admissions to the obstetrical department of the Johns Hopkins Hospital, pp. 32-48, especially pp. 33-35, American Association for Study and Prevention of Infant Mortality, fifth annual meeting, Boston, 1914; J. Whitridge Williams: *The Significance of Syphilis in Prenatal Care and in the Causation of Fetal Deaths*, in *New York State Journal of Medicine*, 1920, Vol. XX, pp. 252-259.

greater difference between the white and colored death rates from tuberculosis at all ages in Baltimore.⁴⁴

The prevention of communicable diseases in infancy is not only a general community health problem but another challenge to all efforts to insure babies breast feeding and good home care. It is also, in large part, a problem of the sound condition and good care of the mother during pregnancy and confinement.

The deaths from such diseases, even where the rate was highest, were few in relation to infant deaths from all causes, and yet they did increase the total infant mortality rate in the group. If no babies had died from these diseases the rate for babies of white mothers would have been 90.6 per 1,000 instead of 95.9 and for babies of colored mothers 141.7 instead of 158.6.

Other causes.

Of the remaining 72 scattered deaths which completed the toll within the group, 10 were assigned to external causes, 7 to causes entered as ill defined or unknown, 10 to meningitis, and 15 to "convulsions." Little variation within the group was found in relation to these deaths. The colored babies had more than their share of deaths from external causes, with a rate of 2.3 per 1,000, as against

⁴⁴NOTE.—

Year, and color of mother.	Estimated population of Baltimore, July 1. ^a	Deaths from tuberculosis. ^b		Year, and color of mother.	Estimated population of Baltimore, July 1. ^a	Deaths from tuberculosis. ^b	
		Number.	Per 1,000 population.			Number.	Per 1,000 population.
White:				Colored:			
1915.....	496,682	798	1.60	1915.....	87,923	489	5.56
1916.....	501,155	812	1.62	1916.....	88,496	509	5.75

^a U. S. Bureau of the Census, Bulletin 133, p. 37.

^b U. S. Bureau of the Census, Mortality Statistics, 1915, p. 570; 1916, p. 420.

Information was secured from various agencies in Baltimore about the mothers shown by their record to have had tuberculosis, either at the time of the birth during 1915 or at some earlier time. This was undoubtedly an incomplete statement of the total number of cases, but it offers a bit of evidence about the increase in hazard to infants whose mothers had had tuberculosis.

Condition of mothers.	Live births.	Infant deaths.			
		From tuberculosis.		From all other causes.	
		Number.	Infant mortality rate.	Number.	Infant mortality rate.
Mothers with tuberculosis.....	96	3	31.3	23	239.6
Mothers without tuberculosis.....	10,701	12	1.1	1,079	100.8

Note that while infant mortality from "all other causes" was higher when the mother had tuberculosis than when she did not have tuberculosis, the difference was especially marked in the mortality from tuberculosis.

0.7 per 1,000 among the white babies, but the whole number of such deaths (10) was too small to be significant. Plainly, however, deaths from external causes usually reflect lack of proper care of the baby.

Of the other 62 deaths, 24, or about two-fifths, occurred in the first month of life, and 50, or nearly four-fifths, occurred during the first six months of life. It seems likely that many of these early deaths were closely related to the deaths classified as due to causes peculiar to early infancy and could have been prevented only by better care of the mother before her baby's birth.

SUMMARY.

The total infant mortality in the Baltimore group was approximately equal to the mortality reported for the cities of the birth-registration area during 1915. The Baltimore group had a rate somewhat higher than this general rate for deaths during the first two weeks and after the first three months of infancy, and lower than this general rate for deaths among infants 2 weeks but less than 3 months old.⁹⁵

The Baltimore rate for causes peculiar to early infancy, which was slightly above that for the birth-registration cities, was relatively high during the first two weeks of life and relatively low thereafter.

The Baltimore rate for gastric and intestinal diseases, which for the year as a whole was above the rate in the birth-registration cities, was lower than the rate elsewhere during the first two months and higher than the rate elsewhere during the remainder of the year. It was especially high among babies in their fourth, fifth, and sixth months of life.

The Baltimore rate for respiratory diseases was relatively high for the year as a whole and was not at any period lower than the rate in the birth-registration cities. The excess in the Baltimore rate appeared chiefly among babies 3 months but less than 9 months old, but also for the relatively few deaths from these diseases among babies under 2 weeks of age the Baltimore rate was higher than the rate elsewhere.

The Baltimore rates for communicable diseases and for the ill-defined and "all other" causes were below the rates for the birth-registration cities.

In each group of deaths, except those from malformations, the rates among colored babies were higher than the rates among white babies. Other variations that accompanied differences in economic and social conditions will appear in the development of the discussion.

⁹⁵ The reader is again reminded that in comparing the rates in the Baltimore group with the cities of the birth-registration area, the rates used as a standard of comparison were almost twice as high as the rates which had prevailed during recent years in the cities of New Zealand. And even where the rate for the Baltimore group as a whole was "relatively low," it was still above the New Zealand rate.

The total infant mortality in the Baltimore group was higher than that in the groups studied by the bureau in Brockton, Akron, and Saginaw, and lower than that in the groups studied by the bureau in Waterbury, New Bedford, Johnstown, and Manchester. The Baltimore rate from gastric and intestinal diseases was markedly higher than the rates in the three other cities with a lower total mortality. The Baltimore rate from the causes peculiar to early infancy was higher than the corresponding rates in New Bedford and in Akron. Saginaw and Brockton showed lower mortality from respiratory and other communicable diseases.

TABLE V.—*Infant mortality rates from specified causes; cities studied by the Children's Bureau.*

City.	Infant mortality rate.			
	All causes.	Gastric and intestinal diseases.	Respiratory and other communicable diseases.	Early infancy.
Johnstown.....	134.0	32.8	38.3	29.6
Manchester.....	165.0	63.3	29.4	26.6
New Bedford.....	130.3	48.3	36.7	29.0
Brockton.....	96.7	12.4	21.5	17.2
Waterbury.....	122.7	41.0	26.6	18.7
Akron.....	85.7	20.4	16.0	26.9
Saginaw.....	84.6	8.2	15.3	17.7
Baltimore.....	103.5	29.1	26.4	17.7

FEEDING AND INFANT MORTALITY.

It has become a truism that babies who are nursed through the greater part of the first year have a lower mortality than babies who are weaned prematurely or are never nursed at all, and that babies who are given during their early months other food in addition to breast milk face a greater hazard than babies who have breast milk only. The extent of the variation is greatly modified by the conditions under which artificial feeding is given and the nature of the food. It is true, also, as shown in later sections of the report, that breast-fed babies in the poorest families have a higher mortality than artificially-fed babies in the most prosperous families, but within each group, distinct and homogeneous in race or nationality and in economic status, an excessive hazard persists among artificially-fed babies as compared with breast-fed babies in the same group.

In these studies "breast feeding" refers to those babies who at the specified age were receiving breast milk and no artificial food whatever. "Artificial feeding" refers to those babies who were receiving no breast milk at all. "Mixed feeding" refers to babies who were being nursed but were having other food besides. No attempt has been made to distinguish among the various kinds of artificial food such as cow's milk (raw or Pasteurized), condensed or evaporated milk, proprietary foods, bread or other solid foods, etc.⁹⁶

The feeding of each baby was recorded and classified separately for each of the 12 months of the first year.⁹⁷

Any comparison of mortality must, therefore, be based primarily on the monthly death rates of the three groups of babies—the breast-fed group, which diminished from month to month as babies were given other food, and the mixed-fed and artificially-fed groups, which increased correspondingly. But from the monthly death rates an annual rate, per 1,000 babies fed, may be computed in order to compare the total hazards to breast-fed and other babies.⁹⁸

⁹⁶ The milk situation in Baltimore during 1915 and 1916 was generally recognized as unsatisfactory. Raw milk, inadequately safeguarded by regulation and inspection of dairies, and "loose milk" were sold under insanitary conditions. Pasteurization was voluntarily carried on by certain large dairies but without standardization of the process. The sale of milk from diseased cows was prohibited, but city health authorities found, year by year, a considerable number of herds which had not been tuberculin tested. A new ordinance intended to remedy these conditions was passed in 1917, to become effective June 1 of that year. (Municipal Journal, Feb. 9, 1917, p. 7.)

⁹⁷ When a shift from one type of feeding to another occurred within the month the month was assigned to the type of feeding which predominated. In most of the tabulations of feeding and mortality, however, the feeding after the ninth month was disregarded; infants surviving at the beginning of the tenth month and deaths among them were classified according to the feeding recorded for the ninth month.

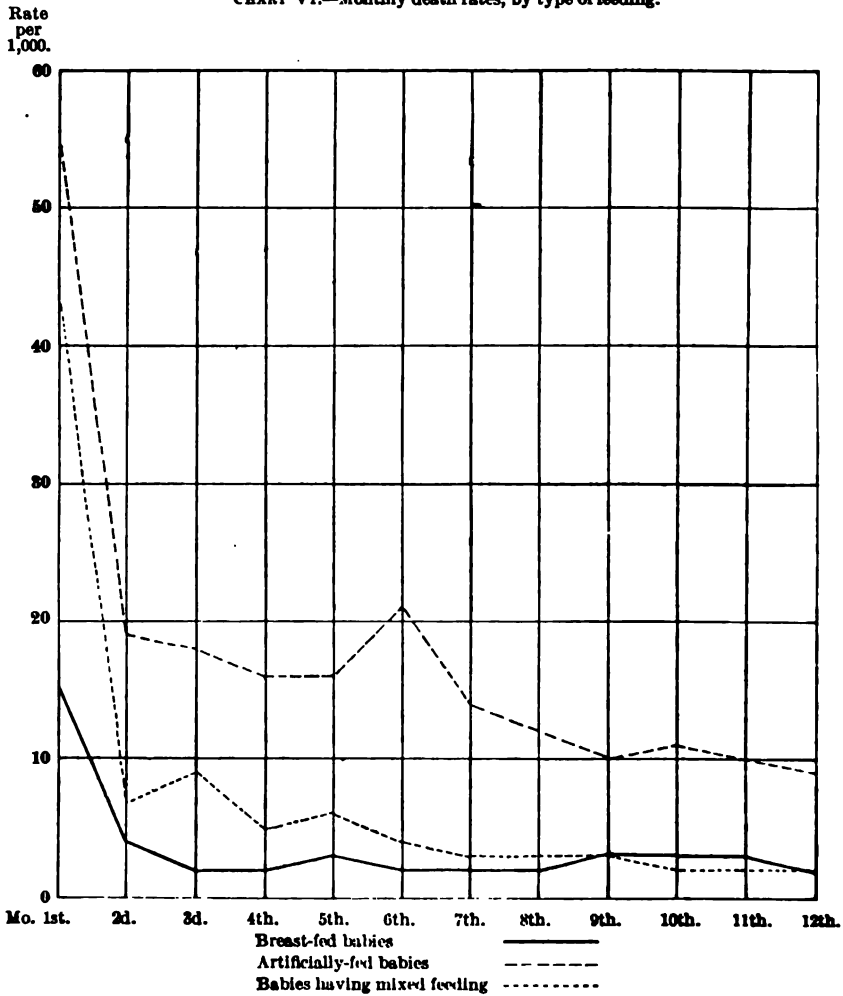
⁹⁸ For the method of computation of annual rate per 1,000 babies fed, see Appendix V, p. 199.

TABLE I.—Monthly death rates, by type of feeding and month of life; infants born in 1915.

Month of life.	Deaths per 1,000 infants surviving at beginning of month.	Deaths per 1,000 infants fed in specified way.		
		Breast fed.	Mixed fed.	Artificially fed.
First.....	144.2	15.0	42.7	55.3
Second.....	6.3	3.9	6.6	15.9
Third.....	6.1	2.4	9.5	15.4
Fourth.....	6.1	2.3	5.4	15.3
Fifth.....	7.0	3.4	5.6	15.7
Sixth.....	7.6	2.2	4.0	20.6
Seventh.....	5.6	1.7	3.2	13.7
Eighth.....	5.6	2.2	3.3	11.5
Ninth.....	5.2	2.8	3.1	8.5
Tenth to twelfth (average).....	4.8	2.7	2.3	8.6

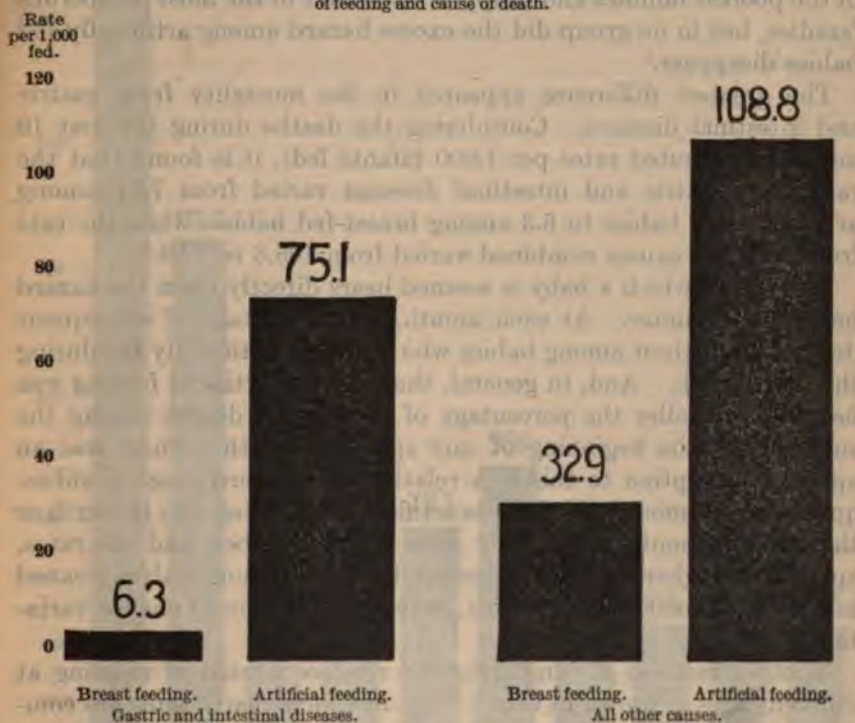
¹ The rate per 1,000 infants fed was 19.3; 269, or 24.9 per 1,000 live births, died not fed.

CHART VI.—Monthly death rates, by type of feeding.



Comparing, first, the monthly death rates, it is found that at each month up to the ninth the babies artificially fed had the highest mortality, and that during the last three months of the first year the babies who had been artificially fed in the earlier months continued to show a higher mortality than the babies who had had breast feeding or mixed feeding through the ninth month. The breast-fed babies showed a monthly death rate of 15 per 1,000 babies fed in the first month, 3.9 per 1,000 babies fed in the second month, and thereafter a fairly constant rate ranging from 1.7 to 3.4 per

CHART VII.—Computed infant mortality rates during first 10 months of life per 1,000 infants fed, by type of feeding and cause of death.



1,000 in each month to the end of the year. The artificially-fed babies showed a monthly death rate of 55.3 per 1,000 babies fed in the first month, 18.9 per 1,000 babies fed in the second month, and a slowly diminishing rate in the succeeding months which touched 9.6 per 1,000 in the tenth to twelfth month. A break in the fall occurred, however, in the sixth month, when the mortality among artificially-fed babies rose to 20.6 per 1,000. The babies having mixed feeding showed the greatest difference between the first and later months. Their rate in the first month, 42.7 per 1,000, approaches the rate for artificially-fed babies; from the second month to the ninth it continued higher than the rate for breast-fed babies

though with a diminishing difference. From the tenth month to the end of the year the babies who had had mixed feeding during the ninth month or earlier had approximately the same mortality as the babies who had been breast fed throughout that period.²⁰

Or, comparing the computed annual rates per 1,000 infants fed, it appears that, on the whole, the hazard to babies having mixed feeding was twice as great, and the hazard to babies artificially fed was more than four times as great, as the hazard to babies who were breast fed. The excess hazard to artificially-fed babies as compared with breast-fed babies in the same group rose to a still higher point in the poorest families and dropped somewhat in the most prosperous families, but in no group did the excess hazard among artificially-fed babies disappear.¹

The greatest difference appeared in the mortality from gastric and intestinal diseases. Considering the deaths during the first 10 months (computed rates per 1,000 infants fed), it is found that the rate from gastric and intestinal diseases varied from 75.1 among artificially-fed babies to 6.3 among breast-fed babies, while the rate from all other causes combined varied from 108.8 to 32.9.²

The age at which a baby is weaned bears directly upon the hazard he must encounter. At each month, the percentage of subsequent deaths was highest among babies who had been artificially fed during the first month. And, in general, the later the artificial feeding was begun the smaller the percentage of subsequent deaths among the survivors at the beginning of any specified month. There was an apparent exception to this in a relatively high percentage of subsequent deaths among babies whose artificial feeding began in the sixth or the seventh month. But they were few in number, and the rates, apparently higher than the corresponding rates among babies weaned in the fourth or the fifth month, may easily be due to chance variation.³

Another method of comparing the relative hazard of weaning at different ages is shown in Chart VIII, in which yearly rates are computed for infants weaned at different ages. In computing the rates, it has been arbitrarily assumed that infants were mixed-fed during

²⁰ See Tables 58 and 59, Appendix VII, pp. 266 and 268.

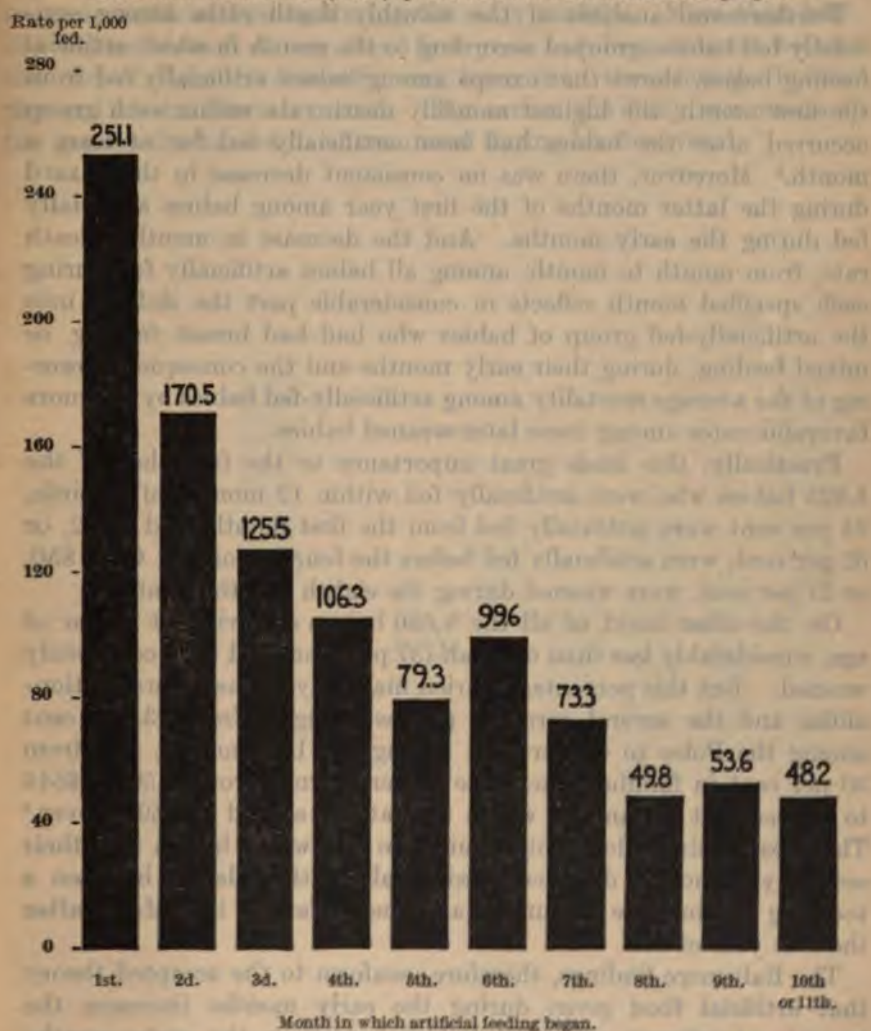
¹ The average excess hazard among artificially-fed babies as compared with breast-fed babies is probably a slight understatement of the true average excess. The artificially-fed babies included a relatively large proportion of babies in the most prosperous families and relatively more of the babies in native white families and fewer of the babies in foreign-born white families than are included in the breast-fed group. The average hazard to artificially-fed babies was based, therefore, on a group weighted a little more favorably than the breast-fed group, in relation to nationality and fathers' earnings. But whether the average hazard to artificially-fed babies was four times as great or more than five times as great is, after all, of little moment. See Table 60, Appendix VII, p. 276.

² See Table 63, Appendix VII, p. 278.

³ See Table 64, Appendix VII, p. 278.

the month preceding the month in which artificial feeding began, and breast fed during the earlier months.* The infant mortality rate per 1,000 for babies artificially fed from birth was 251.1. For infants mixed fed during the first, and artificially fed from the second to the

CHART VIII.—Infant mortality rates, by month of life in which artificial feeding began.



twelfth month, the rate per 1,000 fed was 170.5; while for those breast fed the first eight or nine months and artificially fed only from the tenth or eleventh months, the rate per 1,000 fed was only 48.2. The rates descend with two slight breaks in the regularity—the

* In the computation, average monthly death rates by type of feeding and, for those artificially fed, by the month in which feeding began, have been used as the basis of computation. For further explanation of method, see Appendix V, p. 199.

babies weaned in the sixth seem to have a slightly higher rate than those weaned in the fifth month, but the number of cases upon which the monthly rates are based are small; and the differences are slight among the babies weaned in the eighth, ninth, and later months (eighth month, 49.8; ninth, 53.6; tenth or eleventh, 48.2).⁵

Furthermore, analysis of the monthly death rates among artificially fed babies, grouped according to the month in which artificial feeding began, shows that except among babies artificially fed from the first month, the highest monthly death rate within each group occurred after the babies had been artificially fed for at least a month.⁶ Moreover, there was no consistent decrease in the hazard during the latter months of the first year among babies artificially fed during the early months. And the decrease in monthly death rate, from month to month, among all babies artificially fed during each specified month reflects in considerable part the shifting into the artificially-fed group of babies who had had breast feeding, or mixed feeding, during their early months and the consequent lowering of the average mortality among artificially-fed babies by the more favorable rates among these later-weaned babies.

Practically, this lends great importance to the fact that of the 4,025 babies who were artificially fed within 12 months after birth, 24 per cent were artificially fed from the first month, and 2,082, or 52 per cent, were artificially fed before the fourth month. Only 850, or 21 per cent, were weaned during the eighth month or later.⁷

On the other hand, of all the 9,680 babies surviving at 1 year of age, considerably less than one-half (37 per cent) had been completely weaned. But this percentage varied markedly in the several nationalities and the several earnings groups—ranging from 23 per cent among the Poles to 46 per cent among the Lithuanians, and from 30 per cent in families where the fathers earned from \$450 to \$549 to 63 per cent in families where the fathers earned \$2,850 or over.⁸ The present study does not attempt to follow the babies into their second year nor to draw conclusions about the relation between a too long continuance of nursing and the welfare of the infants after the first year of life.

The Baltimore findings, therefore, conform to the accepted theory that artificial food given during the early months increases the hazards of infancy, and that babies having in the early months breast milk and other food besides, face a greater hazard than babies who are breast fed only, but a lesser hazard than babies who are artificially fed only. They show that the effect of artificial feeding was most marked in gastric and intestinal diseases, but that for

⁵ See Table 65, Appendix VII, p. 279.

⁶ See Table 66, Appendix VII, p. 279.

⁷ See Table 65, Appendix VII, p. 279.

⁸ See Tables 67 and 68, Appendix VII, pp. 279 and 280.

other causes of death, also, the artificially-fed babies had a higher mortality during each month of life than the breast-fed babies. The effect of artificial feeding appeared most markedly after the baby had been deprived of breast milk for at least a month.

Artificial feeding, as it was practiced in Baltimore, meant in large measure artificial feeding during the early months. More than half the babies weaned during their first year had been weaned before the end of their third month, and more than three-fourths before the end of the seventh month. The earlier the baby was weaned the greater the hazard he encountered during his first year.

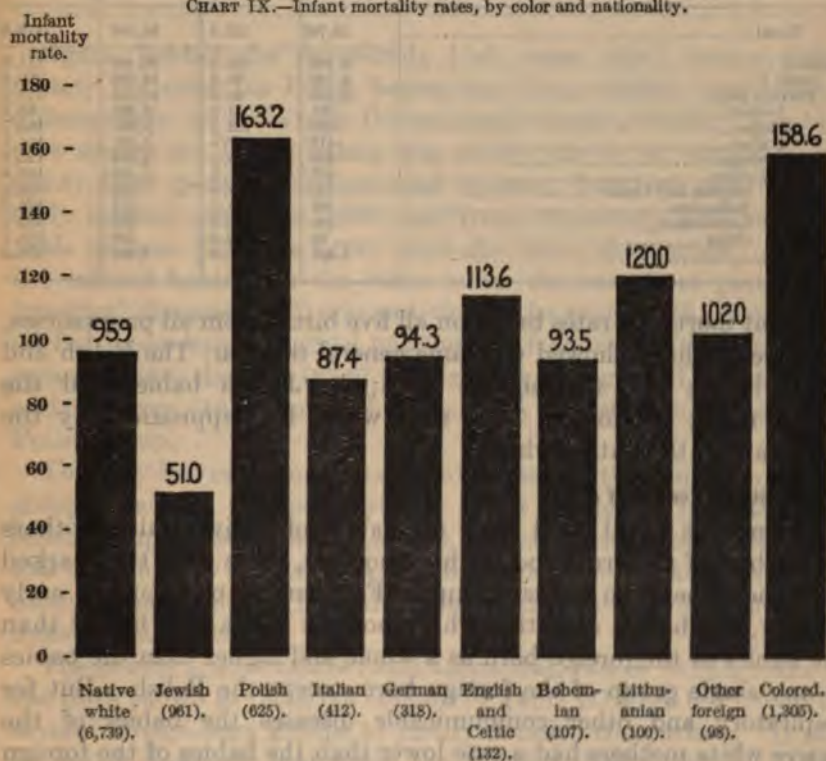


SOCIAL AND ECONOMIC FACTORS IN INFANT MORTALITY.

NATIONALITY AND MORTALITY.

It has been noted that the mortality from all causes and from each cause separately except the gastric and intestinal diseases and malformations was markedly higher among the colored babies than among the white babies in the Baltimore group. Differences quite as marked appear within the white families studied, when

CHART IX.—Infant mortality rates, by color and nationality.



they are divided according to the nationality of the mother. It is true that the foreign-born white families, considered as a single group, showed the same mortality as the native white families—95.9 per 1,000. But the babies of Jewish mothers had the lowest mortality in Baltimore—51 per 1,000—and the Polish babies the highest—163.2 per 1,000. (The rate among colored babies, it will be remembered was 158.6 per 1,000.) The other nationality groups—

Italian, German, English and Celtic, Bohemian, Lithuanian, and all other foreign born—had rates ranging from 120 per 1,000 among the Lithuanians to 87.4 per 1,000 among the Italians, but the numbers of live births within each of these other nationality groups were small and the variations shown may not be significant.

TABLE I.—*Infant mortality rates, by color and nationality of mother; live births in 1915 and live births, all pregnancies.*

Color and nationality of mother.	Live births in 1915.		Live births, all pregnancies.	
	Number.	Infant mortality rate.	Number.	Infant mortality rate.
Total.....	10,797	103.5	34,844	118.3
White.....	9,492	95.9	30,440	111.9
Native.....	6,739	95.9	19,696	110.9
Foreign born.....	2,753	95.9	10,744	113.7
Jewish.....	961	51.0	3,561	65.2
Polish.....	625	163.2	2,681	163.7
Italian.....	412	87.4	1,701	111.1
German.....	318	94.3	1,313	125.7
All other.....	437	107.6	1,498	132.4
English and Celtic.....	132	113.6	529	132.3
Bohemian.....	107	98.5	367	134.0
Lithuanian.....	100	120.0	252	162.7
Other.....	98	102.0	320	118.7
Colored.....	1,305	188.6	4,404	170.5

Infant mortality rates based on all live births from all pregnancies, to these mothers, showed the same general relation: The Polish and Negro babies had the highest rates; the Jewish babies had the lowest rates; the foreign born as a whole had approximately the same rate as the native white.*

Nationality and cause of death.

Behind the equal total rates for babies of native white mothers and babies of all foreign-born white mothers, there were two marked differences between these groups. For causes peculiar to early infancy, the babies of native white mothers had a rate higher than the babies of the foreign born as a whole and higher than the babies in any single group of the foreign born except the Polish. But for respiratory and other communicable diseases the babies of the native white mothers had a rate lower than the babies of the foreign born as a whole and lower than the babies in any single group of the foreign born except the Jewish.

* For detailed tabulations see Tables 60 and 70, Appendix VII, pp. 230 and 231.

TABLE II.—*Infant mortality rates from specified causes, by nationality of mother; live births in 1915.*

Color and nationality of mother.	Infant mortality rate.				
	All causes.	Gastric and intestinal diseases.	Respiratory and other communicable diseases.	Early infancy.	All other causes.
Total.....	103.5	29.1	26.4	37.7	10.3
Native white.....	95.9	28.8	18.4	38.1	10.5
Foreign-born white.....	95.9	29.1	27.2	30.9	8.7
Jewish.....	51.0	9.4	15.6	22.9	3.1
Polish.....	163.2	68.8	33.6	43.2	17.6
Italian.....	87.4	9.7	31.6	34.0	12.1
All other.....	102.2	31.9	34.6	29.1	6.6
Colored.....	158.6	30.7	65.9	49.8	12.3

Again, behind the excessively high rates which were approximately the same for Polish babies and Negro babies were marked differences in the rates from the principal causes of death. The high rate among the Polish babies was chiefly due to an excessive rate (68.8) from gastric and intestinal diseases, but their deaths from early infancy (43.2 per 1,000) and from respiratory and communicable diseases (33.6 per 1,000) were also above the average. Among the colored babies, on the other hand, the rate from gastric and intestinal diseases (30.7) was practically the same as the average for all Baltimore babies studied, but the rate from respiratory and other communicable diseases (65.9) was excessively high and the rate from early infancy (49.8) was higher than the corresponding rate in the Polish group.

The very low rate among babies of Jewish mothers appears in each group of causes. At one point only was it equaled by the rate in any other group: The babies of Italian mothers, whose total mortality was considerably higher than the mortality among babies of Jewish mothers, had the same low rate as the Jewish babies from gastric and intestinal diseases.

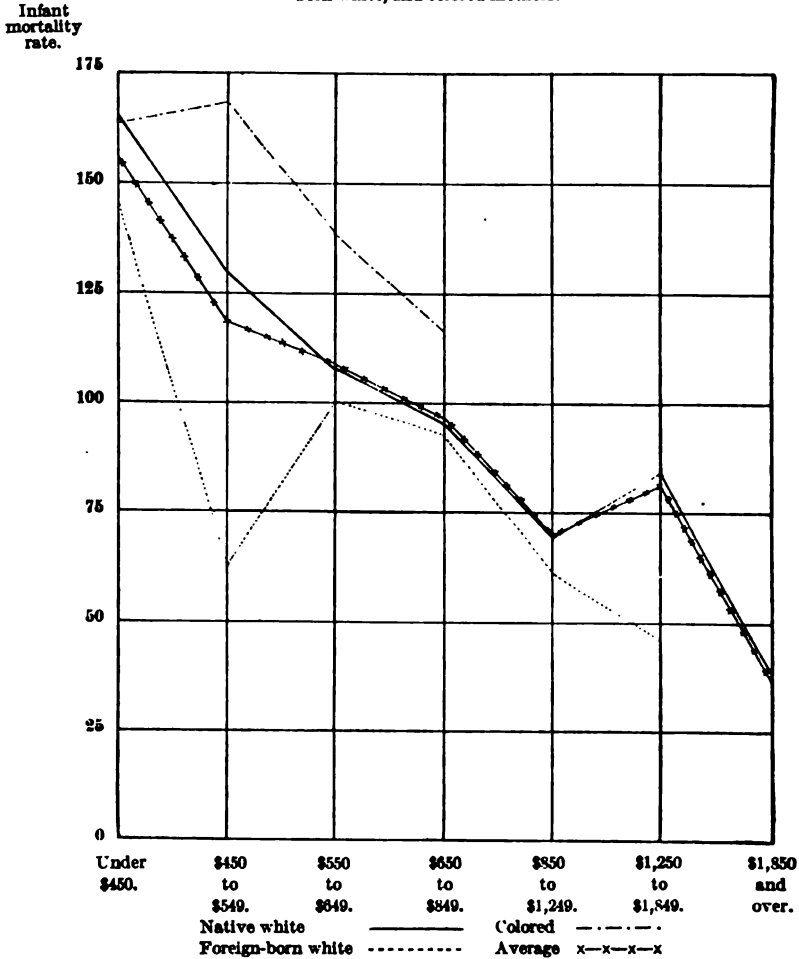
The deaths from scattered and unspecified causes (which make up the rates shown in the sixth column of Table II) were too few in the several foreign-born groups to justify detailed comparison. It may be noted, however, that again the Polish babies show the highest rate and the babies of Jewish mothers the lowest rate.

Social factors in the variation of rates by nationality.

Do the differences in social and economic conditions under which the several groups were living account for these variations? Or are the variations related to other differences in home life or in physical vigor which can not be analyzed in a study like the present one?

The relation which the several social factors seem to bear in themselves to infant mortality will be discussed in later sections. The present section will merely review briefly the items, already noted about the distribution of these factors within each of the principal race and nationality groups, and indicate the points at which varia-

CHART X.—Infant mortality rates from all causes, by fathers' earnings, for infants of native white, foreign-born white, and colored mothers.



tions in rate seem to coincide with or to run counter to the differences in social condition.

Native white and colored families.—The most obvious differences in social conditions in native white and colored families were the excessively high percentages of colored fathers earning the lowest wages and of colored mothers gainfully employed, and the greater prevalence in colored families of many births to a mother and of births following a preceding birth by an interval of less than two years.

As a corollary to the poverty in colored families, their dwellings were poorer than those occupied by native white families. But in relation to room congestion and sanitary equipment of the dwelling—the main points on housing which in the present study have been exactly tabulated—the percentage of colored babies living in unfavorable dwellings was not quite so high as the percentage of native white babies, when families at the same economic level are compared. Housing as a factor distinct from poverty is therefore omitted from this comparison of infant mortality rates in native white and colored families.¹⁰

Six aspects of the relative rates among babies of native white mothers and babies of colored mothers will be considered: (a) Were the higher rates among colored babies due wholly or partly to the greater poverty of their families? (b) Were they due to the larger families and the shorter intervals between births in the colored group? (c) Were they due to a combination of poverty and prevalence of mothers' employment away from home? (d) Were they due to poverty and artificial feeding? (e) Were they due to a lack of trained care for mothers and babies? (f) Is there a difference in mortality that persists when all these factors have been considered?

(a) So far as rates can be computed for colored babies whose fathers earned more than the very lowest wages (that is, at least \$450), the rates were somewhat higher for colored babies than for babies in native white families of the same earnings groups, but these differences were far less than the difference between the native white and colored groups as a whole. And in the families where the father earned less than \$450 the difference disappeared, the babies of native white mothers showing a rate of 164.8 and the babies of colored mothers a rate of 163.7.

TABLE III.—*Infant mortality rates, by father's earnings; infants born in 1915 to native white and colored mothers.*

Earnings of father.	Native white mothers.		Colored mothers.	
	Live births.	Infant mortality rate. ^a	Live births.	Infant mortality rate. ^a
Total.....	5,739	95.9	1,305	158.6
Under \$450.....	449	164.8	507	163.7
\$450-\$549.....	644	128.9	356	168.5
\$550-\$649.....	908	107.9	152	138.2
\$650-\$849.....	1,726	95.6	121	113.7
\$850 and over.....	2,797	69.0	59	.....
No earnings.....	88	.....	69	.....
Not reported.....	127	133.9	41	.....

^a Not shown where base is less than 100.

¹⁰ On housing conditions among the negroes in Baltimore, see p. 42 ff.

A large part of the difference in mortality, but not all, is evidently due to the greater poverty of the colored families.

(b) In every group a short interval since the preceding birth was accompanied by a relatively high mortality. The percentage of short-interval births was considerably higher among the colored families, but when all short-interval births are eliminated and native white and colored families in which the fathers earned under \$550 are compared, it appears that the colored babies had a somewhat higher mortality than the white babies. The short-interval births, considered by themselves, on the other hand, showed approximately the same mortality in white and colored families of this low-earnings level. In general, it would seem, therefore, that the greater prevalence of short intervals between births in colored families contributed to the high mortality among colored infants, but that in the lowest earnings group the mortality in native white families was greater from other causes, which counterbalanced the longer intervals in white families.

TABLE IV.—*Excess mortality among infants of colored mothers, when effect of greater prevalence of short intervals between births is eliminated; infants of native white and colored mothers.*

Color and nativity of mother and earnings of father.	Per cent of live births with interval of less than 2 years.	Infant mortality rate.	
		Live births with interval of less than 2 years.	Live births with interval of 2 years or over.
Total:			
Native white.....	25.5	138.0	88.6
Colored.....	33.5	188.9	141.4
Under \$550:			
Native white.....	27.9	206.6	134.1
Colored.....	35.7	207.0	142.2

Again, considering all earnings groups together, more than twice as high a percentage of colored babies as of babies in native white families were seventh or later in order of birth. But the distinctive hazards to these babies of the later orders of birth evidently combined with other factors to raise the total mortality among colored babies and themselves played a minor part in the total rate. The difference in rates between the later born and the earlier born was less among the colored babies than among the babies of native white mothers, the colored rate remaining high, even when babies seventh or later in order of birth were eliminated from the comparison. The part played by large families and short intervals between births in the total mortality among the colored infants seems to have been, therefore, of small importance.

TABLE V.—*Excess mortality among infants of colored mothers, when effect of greater prevalence of births of late orders is eliminated; infants born in 1915 to native white and colored mothers.*

Color and nativity of mother and earnings of father.	Per cent of live births, seventh or later. ¹	Infant mortality rate.	
		Births, seventh or later.	Births, sixth or earlier. ¹
Total:			
Native white.....	9.8	132.6	84.3
Colored.....	20.0	152.3	146.9
Under \$500:			
Native white.....	14.5	163.4	127.5
Colored.....	20.8	170.5	150.3

¹ Based on single issues only. See Table 138, Appendix VII, p. 339.

(c) It is plain that in some way the mothers' employment was a factor in the excessive mortality of colored babies, for when all mothers employed away from home during pregnancy or within 12 months after the birth in 1915 are eliminated from the comparison, the total mortality rates among the colored babies and the babies in native white families of the same earnings groups become almost identical, with a slight difference in favor of the colored babies.¹¹

TABLE VI.—*Relative mortality among infants of white and colored mothers, when effect of greater prevalence of employment is eliminated; infants born in 1915 to native white and colored mothers not employed away from home.*

Earnings of father.	Live births to mothers not employed away from home. ¹			
	Native white mothers.		Colored mothers.	
	Live births.	Infant mortality rate.	Live births.	Infant mortality rate.
Under \$450.....	329	130.7	217	124.4
\$450-\$549.....	548	131.4	184	108.7
\$550-\$849.....	2,467	94.4	160	93.8

¹ During pregnancy or within 12 months after the birth of a baby in 1915. Compare Table 102, Appendix VII, p. 304.

(d) More colored babies than babies of native white mothers were nursed by their mothers. The higher mortality among colored babies as compared with white babies (when working mothers are included) can not be attributed to an excess of artificial feeding in the colored group; and the equivalent rates among colored babies and babies of native white mothers (when working mothers are not included) occur in spite of markedly more favorable feeding among the colored babies than among the babies of native white mothers.

¹¹ The relation of mothers' employment to mortality is discussed in detail in another section of the report, pp. 114 to 131.

Throughout, whether working mothers are included or not in the comparison, the hazard to breast-fed colored babies or to artificially-fed colored babies, was greater than the hazard to babies of native white mothers reporting the same type of feeding.

TABLE VII.—*Excess mortality among infants of colored mothers, when effect of differences in type of feeding and mother's employment is eliminated; infants of native white and of colored mothers in families where the father earned under \$550.*

Type of feeding and nonemployment of mother.	Computed mortality rates among infants born in 1915 in families where the father earned under \$550.			
	For first 10 months per 1,000 infants fed.		For second to tenth months per 1,000 infants surviving at beginning of second month. ¹	
	Native white mothers.	Colored mothers.	Native white.	Colored.
All mothers:				
Breast.....	36.7	73.3		
Mixed.....	100.3	127.9		
Artificial.....	268.8	375.7		
Mothers not employed:				
Breast.....	32.2	79.3	11.8	53.2
Mixed.....	107.1	131.4	107.1	13.4
Artificial.....	259.3	448.9	196.8	204.5

¹ By eliminating deaths during the first month—the period in which most of the deaths from prenatal causes occur—the effect of the greater prevalence of employment during pregnancy among the colored mothers is, at least in part, neutralized. Rate not computed for all mothers.

(e) The infant-welfare agencies in Baltimore reached during the period of this study more of the colored mothers than of the native white mothers in Baltimore. This subject is discussed in detail in Appendix VI,^{11a} but it should be noted here that comparison of native white and colored families at the same economic level showed a higher percentage of colored mothers than of white mothers receiving prenatal care of Grades A and B and trained nursing care at confinement, and a larger percentage of colored babies than of white babies receiving supervision from infant-welfare agencies. The percentage of cases dropped by the infant-welfare agencies because the mother failed to cooperate was smaller in the colored group than in any other.

(f) Among the colored babies, then, the greater poverty of the fathers (with the attendant evil of poor housing), the more general employment of the mothers, the tendency toward larger families and shorter intervals between births, and the wider prevalence of venereal disease indicated by the high mortality assigned to syphilis, were increasing mortality, while mothers' nursing of their babies, prenatal care, and instruction and supervision received from infant-welfare

^{11a} See p. 203.

agencies were tending to reduce mortality. As the net result, the mortality from gastric and intestinal diseases—which responds most readily to breast feeding and intelligent care—was relatively low; the mortality from early infancy—which was especially increased by mothers' employment away from home during pregnancy and by the prevalence of venereal disease—was checked by prenatal care from rising to the excessively high rate found in the poorest native white families; and the mortality from respiratory diseases and other communicable diseases, which tends always to rise with poverty, was almost twice as high among the colored babies in the poorest families, as among babies in native white families of the same economic level, suggesting a less protection from exposure to contagious diseases or a lower resistance in the colored families.

TABLE VIII.—*Infant mortality rates, by cause of death, earnings of father, and color of mother; live births in 1915.*¹

Earnings of father.	Infant mortality rate. ²					
	Gastric and intestinal diseases.		Respiratory and other communicable diseases.		Early infancy.	
	Native white mothers.	Colored mothers.	Native white mothers.	Colored mothers.	Native white mothers.	Colored mothers.
Total.....	28.9	30.7	18.4	65.9	38.1	49.8
Under \$450.....	51.2	33.5	37.9	71.0	62.4	47.3
\$450-\$849.....	34.2	28.6	21.0	55.6	41.5	54.1
\$850 and over.....	14.7	.....	11.4	.....	31.1	.....

¹ See Table 78, Appendix VII, p. 286.

² Not shown where base is less than 100.

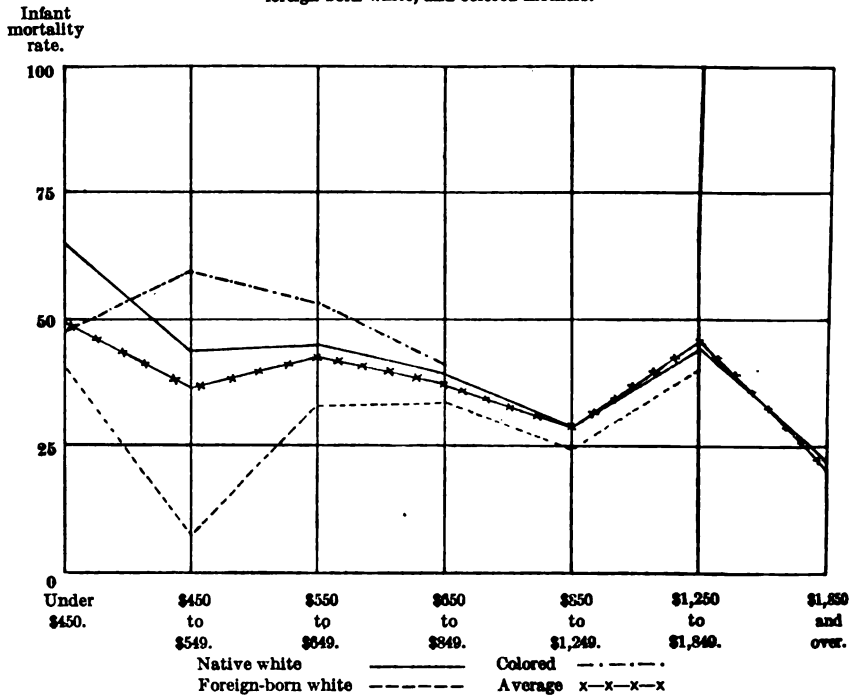
In relation to each group of causes, the greater poverty of the colored families was by itself a factor in their high average mortality. The average mortality in the native white families represented throughout a balance between a high rate in the poor families and a low rate in the prosperous families; but the average in the colored families was not tempered by lower rates in some favored group, since there were almost no "prosperous" colored families.¹²

Native white and foreign-born white families.—The foreign-born group itself presents so wide a diversity in rates that the social and economic differences between the foreign-born group as a whole and the native white group may be discussed briefly. Three points stand out: The fathers' earnings were much lower among the foreign born than the native white; the percentage of mothers employed away from home was slightly higher among the foreign born than the native white, whether a comparison is made of families at all economic levels

¹² Three live births to colored mothers were in families where the father earned \$1,850 or over; 11, where the father earned \$1,250 to \$1,849.

combined or only of those in both groups in which fathers' earnings were identical; and room congestion was more common in the foreign-born families than in native white families having the same economic status. In addition, relatively more of the foreign-born white mothers than of the native white mothers had borne seven or more children; but the difference on this point is reduced when corresponding earning groups are compared; and the foreign-born white mothers as a whole, seem not to have had shorter intervals between births than the native white mothers.

CHART XI.—Infant mortality rates from early infancy, by fathers' earnings, for infants of native white, foreign-born white, and colored mothers.



Except for the relatively high mortality from respiratory and other communicable diseases among the babies of the foreign-born mothers, the comparative rates in the foreign-born and native white families ran counter to that which might have been expected from these social conditions if no other factors had been present. For example, comparing only those families in which the fathers earned under \$650, it is found that there was among the babies of native white mothers the higher mortality from early infancy, in spite of a relatively low percentage of employment away from home, and the higher mortality from gastric and intestinal diseases, in spite of less congested dwellings. The total mortality, in families with earnings

CHART XII.—Infant mortality rates from gastric and intestinal diseases, by fathers' earnings, for infants of native white, foreign-born white, and colored mothers.

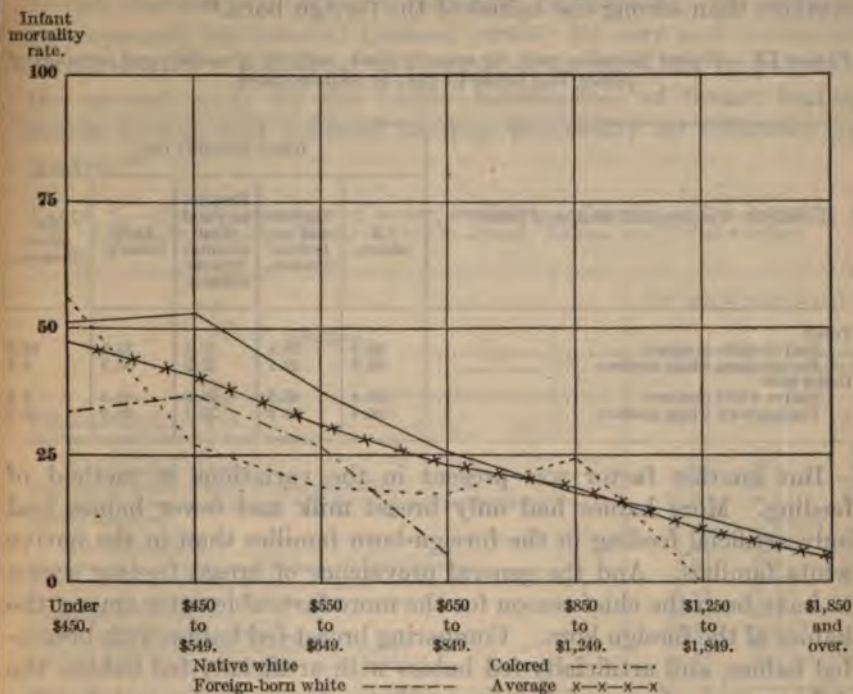
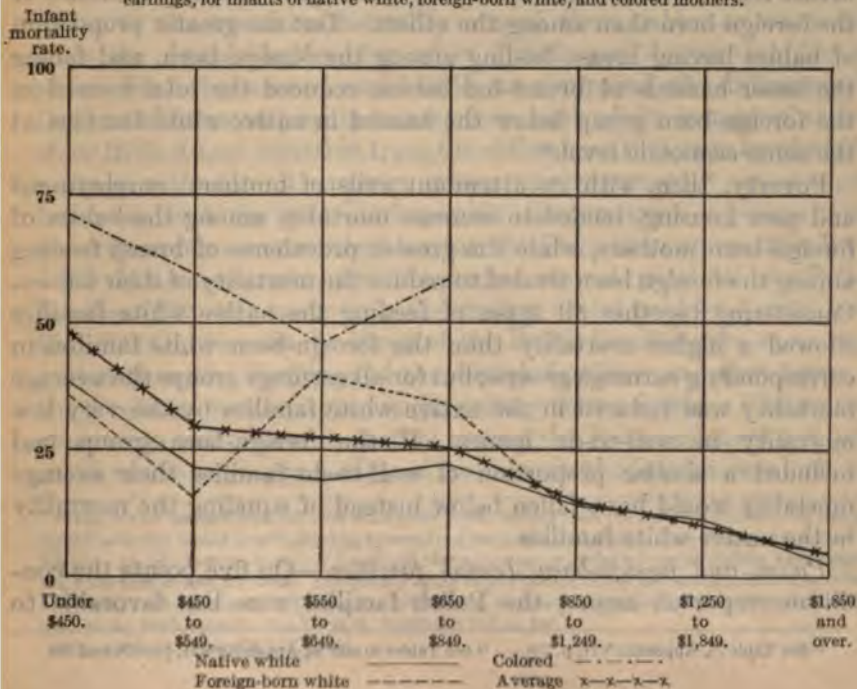


CHART XIII.—Infant mortality rates from respiratory and other communicable diseases, by fathers' earnings, for infants of native white, foreign-born white, and colored mothers.



under \$650, was definitely higher among the babies of native white mothers than among the babies of the foreign born.¹³

TABLE IX.—*Infant mortality rates, by cause of death, nativity of mother, and earnings of father; live births in 1915 to white mothers.*

Nativity of mother and earnings of father.	Infant mortality rate.				
	All causes.	Gastric and intestinal diseases.	Respiratory and other communicable diseases.	Early infancy.	All other diseases.
Total:					
Native white mothers.....	95.9	28.8	18.4	38.1	14.5
Foreign-born white mothers.....	96.9	29.1	27.2	30.9	17
Under \$650:					
Native white mothers.....	127.4	45.5	24.0	48.5	9.5
Foreign-born white mothers.....	106.4	36.2	30.7	28.6	18.9

But another factor was present in the variations in method of feeding. More babies had only breast milk and fewer babies had only artificial feeding in the foreign-born families than in the native white families. And the general prevalence of breast feeding seems to have been the chief reason for the more favorable rates among the babies of the foreign born. Comparing breast-fed babies with breast-fed babies, and artificially-fed babies with artificially-fed babies, the differences in favor of the foreign-born disappeared; and for the breast-fed babies the total mortality was higher among the babies of the foreign-born than among the others. But the greater proportion of babies having breast feeding among the foreign born, and facing the lesser hazards of breast-fed babies, reduced the total hazard in the foreign-born group below the hazard in native white families at the same economic level.¹⁴

Poverty, then, with its attendant evils of mothers' employment and poor housing, tended to increase mortality among the babies of foreign-born mothers, while the greater prevalence of breast feeding among the foreign born tended to reduce the mortality of their babies. Considering together all types of feeding the native white families showed a higher mortality than the foreign-born white families in corresponding earnings groups; but for all earnings groups the average mortality was reduced in the native white families by the very low mortality in well-to-do homes. If the foreign-born group had included a similar proportion of well-to-do families their average mortality would have fallen below instead of equaling the mortality in the native white families.

Polish and foreign-born Jewish families.—On five points the conditions reported among the Polish families were less favorable to

¹³ See Table 78, Appendix VII, p. 286.

¹⁴ See Tables 60 and 80, Appendix VII, pp. 276 and 288.

the welfare of their babies than the conditions reported among the Jewish families: (1) father's earnings; (2) housing; (3) mothers' employment; (4) interval between births; (5) care and instruction of the mother. In respect to feeding, so far as it can be judged in the present study by the rough classifications of breast feeding, mixed feeding and artificial feeding, practically no difference appeared.¹⁵

TABLE X.—*Relative prevalence of certain conditions influencing infant mortality, by nationality of mother; births in 1915 to Jewish, Italian, and Polish mothers.*

Condition.	Per cent of births in 1915.		
	Jewish mothers.	Polish mothers.	Italian mothers.
Father earning under \$650.....	46.3	70.5	62.1
Mother employed away from home:			
During pregnancy.....	1.3	32.8	3.9
During lifetime of infant.....	.9	23.4	1.7
Households with 2 or more persons per room.....	8.9	30.7	13.9
Dwelling lacking one or more of three items of sanitary equipment.....	58.2	94.1	79.7
Mother reporting:			
7 or more issues.....	17.6	25.5	19.5
10 or more issues.....	3.8	8.2	7.3
Mother pregnant within year or during infant's lifetime.....	7.9	17.0	25.2
Any prenatal care by physician.....	53.4	13.9	22.1
Prenatal care of Grades A and B.....	35.3	7.9	9.2
Physician at confinement.....	64.8	22.6	54.8
Trained nurse at confinement.....	37.2	6.0	8.5
Any supervision from infant-welfare agencies.....	45.1	22.4	32.3
Regular supervision from infant-welfare agencies.....	24.5	5.7	13.6

(1) The greater poverty of the Polish families was only a partial factor in the excessive mortality among their babies as compared with the Jewish babies; for when Polish and Jewish families in which the father earned under \$650 are compared, the differences in their total rates and in their rates from each of the groups of causes show little if any variation from the differences that appear when the average rates for all earnings groups are compared.¹⁶ It is plain, however, that the most unfavorable circumstances accompanying poverty were more prevalent among the Poles than among the Jews.

(2) It has been noted that the median annual rental paid by Polish families (\$70) was lower than the median rental paid by Jewish families (\$114); that the dwellings of the Polish families were more congested than the dwellings of the Jewish families; and that fewer of the dwellings were equipped with sanitary conveniences. The greater congestion and poorer sanitation among the Poles appeared not only in all earnings groups combined but also in the families in which the

¹⁵ The Jewish families reported very little more breast feeding than the Polish families during the first month; after the second month this was reversed and the Polish had slightly more breast feeding than the Jewish. At each month, excepting the ninth, the percentage artificially fed was slightly higher among the Poles than among the Jews. The quality of the mixed feeding and of the artificial feeding may have been better in the Jewish group than in the Polish group because of the greater prevalence of infant-welfare work in the Jewish group. See Table 81, Appendix VII, p. 239.

¹⁶ See Table 78, Appendix VII, p. 236.

father earned under \$650. It is known that overcrowding and lack of conveniences within the dwelling react disastrously on the baby. Rates in relation to room congestion can not be computed for Jewish and Polish babies separately; but a comparison of the actual deaths among Jewish and Polish babies who had survived the first two weeks with the expected deaths (computed from the numbers in each group living in congested dwellings and the average death rate for all foreign-born nationalities in similar dwellings) shows actual deaths far below the expected number among the Jews and far above the expected number among the Poles (Jewish, 54 expected, 25 actual; Polish, 45 expected, 75 actual).

TABLE XI.—*Relative mortality in Jewish and Polish families, when effect of differences in room congestion is eliminated; infants, born in 1915 to Jewish and Polish mothers, who survived two weeks.*

Persons per room.	Infants (of foreign-born white mothers) surviving 2 weeks.						
	Deaths per 100.	Jewish mothers.			Polish mothers.		
		Infants.	Deaths.		Infants.	Deaths.	
			Actual.	Expected. ¹		Actual.	Expected. ¹
Total.....		931	25	54.4	597	75	44.7
Less than 1.....	3.9	342		13.3	68		2.7
1 but less than 2.....	6.4	506		32.4	345		22.1
2 or more.....	10.5	83		8.7	183		19.2
Not reported.....	66.6				1		.7

¹ Expected deaths in each nationality are computed by multiplying number of infants in each group by death rate (all nationalities combined) for infants in dwellings with stated number of persons. For detailed discussion of method, see Appendix V, p. 201.

Rates computed in relation to the sanitary equipment of the dwelling indicate that while the greater prevalence of bad housing among the Poles may accentuate the difference, part of the excess mortality among the Poles must be traced to some further cause. In dwellings lacking one or all of three specified items of sanitation and in families where the father earned less than \$650, the Polish mortality was 12.6 per 100 infants surviving the first two weeks, the Jewish mortality 2.2.¹⁷

(3) Employment of the mother away from home was far more prevalent among the Poles than among the foreign-born Jews. This employment increased the mortality among the Polish babies. (See p. 114 ff.) It accounts, however, for only part of the difference in rates in these two nationalities. Comparing families in which the mother was not employed away either during pregnancy or at any time within 12 months after the birth in 1915, a persistently higher mortality was found among Polish babies than among Jewish babies.

¹⁷ See Table 91, Appendix VII, p. 294.

(4) More than twice as many of the Polish mothers as of the foreign-born Jewish mothers became pregnant during the infant's lifetime and within a year after the birth in 1915; Polish, 17 per cent, and Jewish, 7.9 per cent. (For discussion of the effect of short interval between births, see p. 139.) But comparing only the infants of mothers who did not become pregnant within a year, a mortality still markedly higher was found among the Poles than among the Jews, with a Polish rate of 153.7 per 1,000 live births and a Jewish rate of 50.6 per 1,000 live births.¹⁸

(5) Relatively few of the Polish mothers were reached by the infant-welfare activities in Baltimore, and the contrast between the Polish families and the Jewish families on this point was marked.

TABLE XII.—Relative prevalence of types of prenatal and confinement care and supervision from infant-welfare agencies in Jewish and Polish families.

Kind of care.	Per cent having specified kind of care. ¹	
	Jewish mothers.	Polish mothers.
Any prenatal care from physician.....	53.4	13.9
Prenatal care of Grades A and B.....	35.3	7.9
Physician attendant at confinement.....	64.8	22.6
Trained nursing care, confinement.....	37.2	6.0
Any supervision from infant-welfare agencies.....	45.1	22.4
Regular supervision from infant-welfare agencies.....	24.5	5.7

¹ Percentages for prenatal and confinement care based on mothers who had had births in 1915; percentages of supervision from infant-welfare agencies based on infants born in 1915 who survived 2 weeks.

Whether these factors together account for the differences in mortality among Polish and Jewish babies, or whether other factors existed which did not appear in the present study, can not be determined. Unfortunately, the groups were too small to permit a com-

¹⁸ The mortality rates are not materially altered by eliminating the time lived by infants of mothers who became pregnant during the infant's lifetime and the deaths among these infants, as shown in the following table. For a discussion of the excess mortality among infants of mothers who became pregnant during the infant's first year of life, see p. 140.

Nationality of mother.	Infant mortality rate.	
	All mothers.	Mothers not pregnant within year after birth.
Total.....	103.5	101.6
Native white.....	95.9	93.8
Jewish.....	51.0	50.6
Polish.....	163.2	153.7
Italian.....	87.4	89.9
Other foreign-born white.....	102.0	101.8
Colored.....	158.6	160.8

parison of Jewish and Polish families in which no one of these unfavorable factors was present and in which the fathers' earnings and the grade of prenatal care, etc., were identical.¹⁹

A word must be added about the difference between the Polish and Jewish rates and the rates among babies of native white mothers.

An excess in mortality among Polish babies as compared with babies of native white mothers follows naturally from the conditions surrounding them. Just as we have noted in our comparison of Polish and Jewish babies the conditions among the Poles involving excess hazard to their babies, so, point by point, the comparison might be repeated with equal force as between the Polish babies and the babies of native white mothers. The fact that more Polish babies than babies of native white mothers were breast fed is the only item more favorable to the Polish babies than to the others. But the rate for breast-fed Polish babies—83.7 per 1,000 babies fed—is itself so excessive that the somewhat greater prevalence of breast feeding still leaves the total Polish mortality far in excess of the mortality in native white families.

On the other hand, poverty and poor housing are more prevalent among the Jews than among the native white families, and more Jewish mothers than native white mothers reported having had seven or more births.²⁰ If these conditions were not balanced by others, more favorable in the Jewish families than in the native white families, the Jewish rate would fall, not below the rate in native white families, but between the rates for native white and for Polish families. Actually, the Jewish rate is almost twice as favorable as the rate among babies of native white mothers.²¹

Four of these more favorable factors in the Jewish homes are clear from the tabulations: (1) Fewer mothers were employed away from home; (2) fewer babies followed a preceding birth by an interval under two years; (3) more babies were breast fed; (4) more mothers had Grade A or Grade B prenatal care, trained nursing care at confinement, and more babies had regular supervision from infant-welfare agencies. Apart from the prevalence of one or another type of feeding, these factors, favorable and unfavorable, seem approximately to balance among the native white and the Jewish families.

¹⁹ The Italians had a mortality falling between the mortality of the Jews and the Poles. In each of the factors presented in this section, except interval between births, the Italians had conditions less favorable than the Jews and more favorable than the Poles. The percentage of Italian mothers pregnant within a year was, however, higher than the corresponding percentage in any other group. See Table 161, Appendix VII, p. 355.

²⁰ Note, however, the small percentage of Jewish mothers who had 10 or more births: Polish, 8.2; Jewish, 3.8; native white, 2.9.

²¹ In families where the fathers earned less than \$550, the Jewish rate is quite as definitely more favorable than the rate in native white families as it was in the whole group, all grades of earnings combined. This was true for the total mortality and for each group of causes separately. Also, in families where the fathers earned less than \$550 and the dwelling lacked one or more of three selected items of sanitation, the Jewish rates from all causes and from gastric and intestinal diseases fell further below the rates for native white families than when the average rates for all earnings groups and all dwellings are compared. See Tables 78 and 91, Appendix VII, pp. 286 and 294.

The mortality of breast-fed babies was almost identical in both groups—32.7 per 1,000 fed in the native white families and 31.4 in the Jewish families. But the scales tip slightly in favor of the Jewish babies, for the artificially-fed babies had a rate of 160.5 per 1,000 fed in the native white families and 137.2 in the Jewish families. With the greater prevalence of breast feeding among the Jewish mothers, the total mortality in their families naturally fell definitely below the total mortality in the native white families.

Summary.

The highest rates by color and nationality were found among the Polish and the Negro babies. They seem to have been due in part to the fact that these two groups had the largest percentage of fathers earning very low wages and of mothers gainfully employed away from home. In addition, the Polish families had more congested dwellings and more dwellings lacking in sanitary equipment than any other group, even when compared with other families at the same earnings level; and the Polish mothers had received less trained care and instruction during pregnancy, confinement, and the year after the birth than any others in Baltimore. Among the Polish babies the computed annual rates from all causes, per 1,000 babies fed, were excessive even for breast-fed babies; and, in spite of the relatively high percentage of breast feeding among them, their excess mortality appeared chiefly in gastric and intestinal diseases.

The negro families had the poor housing that accompanies poverty, but in comparison with other families at the same economic level their room congestion and lack of sanitary equipment were not excessive; on general conditions, such as dampness and ill repair, the present study furnishes no information. The negro mothers more generally than any others received trained care and instruction in maternal and infant hygiene. The high mortality among colored babies was not due to a high rate from gastric and intestinal diseases; and their rate from early infancy was above the average, but below the corresponding rate in the poorest native white families. Their greatest excess appeared in the deaths from respiratory and from other communicable diseases.

The lowest rate, by nationality, was found among the babies of foreign-born Jewish mothers. The rate for these babies was much lower than the rate among babies of native white mothers, in spite of the greater poverty in the Jewish families with its attendant evil of poorer housing. But in the employment of mothers away from home, the interval between births, the prevalence of breast feeding, and the receiving of trained care and instruction by the mothers, conditions were more favorable among the Jewish mothers than among the native white mothers.

POVERTY AND INFANT MORTALITY.

Fathers' earnings and mortality rates.

In Baltimore, as elsewhere, the babies in poor families had the greatest hazards to face. Among the 1,544 babies whose fathers earned less than \$450 during the year after the baby's birth, more than 1 in 7 died within the year; among the 431 babies whose fathers earned \$1,850 or more, 1 in 27 died within the year. Eliminating differences in race and nationality and considering only the babies born to native white mothers, the same extremes are found—1 in 26 dying in the most prosperous homes and about 1 in 6 dying in the poorest homes.²²

TABLE XIII.—*Infant mortality rates, by earnings of father and color and nationality of mother; live births in 1915.*

Earnings of father.	Infant mortality rate. ¹		
	Native white mothers.	Foreign-born white mothers.	Colored mothers.
Total.....	95.9	95.9	153.6
Under \$450.....	164.8	144.6	163.7
\$450-\$549.....	128.9	92.4	168.5
\$550-\$649.....	107.9	100.3	138.2
\$650-\$849.....	95.6	93.0	115.7
\$850-\$1,249.....	62.9	61.1	.....
\$1,250-\$1,849.....	84.3	46.7	.....
\$1,850 and over.....	38.3	.....	.....

¹ Not shown where base is less than 100.

The very low infant mortality in families where the fathers earned at least \$1,850 (a sum which at that time was held to be sufficient to maintain a family at the comfort level) suggests that the differences in mortality in the several earnings groups below \$1,850 may be less significant than the difference between this "\$1,850 and over" group and all poorer families. Unfortunately, the numbers are too small to permit the clear analysis of higher earnings groups above \$1,850 (and above \$2,850) which would be of interest. Except among the native white families, however, this comparison of the "\$1,850 and over" group with all poorer families is impossible, because the general level of earnings was low. (See Chart X, p. 80.)

In the foreign white families, all nationalities combined, only 62 births occurred where the fathers earned as much as \$1,850, and in no single foreign nationality except the Jewish were there 100 or more live births in families where the fathers earned even as much as \$850, so that no comparison of rates by detailed grouping of fathers' earnings can be made within each nationality. But if each nationality is divided into two earnings groups—under \$650 and \$650 and over—it is found that in both groups the Jewish rate was low and the Polish

²² For detailed tabulation see Tables 18 and 74, Appendix VII, pp. 234 and 238.

rate was high, while the Italians and "all other foreign" families showed markedly higher rates below this dividing line than above it.²³

TABLE XIV.—*Infant mortality rates, by earnings of father, selected nationalities; live births in 1915.*

Nationality of mother.	Infant mortality rate.	
	Earnings of father under \$850.	Earnings of father \$850 and over.
Foreign-born white mothers.....	106.4	73.0
Jewish.....	49.3	40.5
Polish.....	160.3	153.4
Italian.....	105.5	48.6
All other.....	112.1	86.7

In the colored families only 3 babies were born whose fathers earned \$1,850 or more, and only 59 babies whose fathers earned as much as \$850; in fact, nearly two-thirds of all were in families where the fathers earned less than \$550, so that the comparison of infant mortality by fathers' earnings in the colored families is especially limited. It is plain, however, that the colored babies whose fathers earned less than \$550 had a higher rate than those whose fathers earned \$550 or more. (See Charts XI, XII, and XIII, pp. 86 and 87.)

In ascending the scale of fathers' earnings, the decrease in infant mortality in the more well-to-do families represents, in the main, a decrease in deaths from gastric and intestinal disorders and from respiratory and other communicable diseases; but among the babies of native white mothers there was also a definite decrease in deaths from causes peculiar to early infancy.²⁴ Or, separating the deaths of babies who died immediately after birth, before they had been fed at all, and all other deaths during the first year of life, it is found that the decrease in the infant death rate appears chiefly in the later deaths—although, again, among the babies of native white mothers, there was the lowest rate for deaths immediately after birth in the families of the highest earnings group.²⁵

The total infant mortality decreased steadily from one earnings group to the next among the white babies of both native and foreign mothers, except for one break in the downward curve of rates in each group.

(1) The babies of native white mothers in families where the fathers earned \$1,250 but less than \$1,850 had a total infant mortality rate higher than the babies whose fathers earned \$850 but less than \$1,250. But their rate—84.3 per 1,000—was lower than the rate for babies whose fathers earned less than \$850, and above \$1,850 the rate dropped sharply again.

²³ For detailed tabulation see Table 78, Appendix VII, p. 286. ²⁵ See Table 79, Appendix VII, p. 283.

²⁴ See Table 78, Appendix VII, p. 286.

TABLE XV.—*Infant mortality rates, by cause of death and earnings of father; infants of native white mothers.*

Earnings of father.	Infant mortality rate; infants of native white mothers.		
	All causes.	Early infancy.	All other causes.
Total.....	95.9	39.1	57.7
Under \$450.....	164.8	62.4	102.4
\$450-\$549.....	128.9	43.5	85.4
\$550-\$649.....	107.9	45.2	62.7
\$650-\$849.....	95.6	38.8	56.8
\$850-\$1,249.....	69.9	28.3	41.6
\$1,250-\$1,849.....	84.3	44.5	39.7
\$1,850 and over.....	38.3	21.9	16.4

This break in the downward curve appeared only in the rates from early infancy. That is to say, the mortality related to the care and condition of the mother was unfavorable in this group which lay between the poor and the well to do, but the mortality related to the care of the baby after birth and the home surroundings was more favorable here than in any poorer homes. It should be noted, however, that even for the causes peculiar to early infancy the highest rate was found in the families where the father earned less than \$450 and the lowest rate where the father earned \$1,850 or more.²⁶

(2) In the foreign-born white families, all nationalities combined, the families where the father earned under \$450 had the highest total infant mortality rate and the families where the fathers earned \$1,250 or over had the lowest total infant mortality rate, and these extremes fell definitely above and below the rates for any earnings groups between \$450 and \$1,250. But a break in the curve between these two extremes occurred at \$450 to \$549, where the rate was lower than in the two earnings groups next above and practically identical with the rate at \$850 to \$1,249.

TABLE XVI.—*Infant mortality rates, by cause of death and earnings of father; infants of foreign-born white mothers.*

Earnings of father.	Infant mortality rate; infants of foreign-born white mothers.				
	All causes.	Gastric and intestinal diseases.	Respiratory and other communicable diseases.	Early infancy.	Other causes.
Total.....	95.9	29.1	27.2	30.9	8.7
Under \$450.....	144.6	56.1	35.7	40.8	11.9
\$450-\$549.....	62.4	26.7	15.6	8.9	11.1
\$550-\$649.....	110.2	18.6	39.6	32.6	9.4
\$650-\$849.....	93.0	17.5	31.6	33.3	10.5
\$850 and over.....	84.8	16.1	9.7	27.4	1.6
\$850 to \$1,249.....	61.1	24.4	11.9	24.4	.....
\$1,250 and over.....	42.5	.....	4.8	33.0	4.8

²⁶ For detailed tabulation see Table 78, Appendix VII, p. 236.

This comparatively low rate in so poor an earnings group appeared in the rates from early infancy and from respiratory and other communicable diseases, but not in the rate from gastric and intestinal diseases. For deaths assigned to early infancy this earnings group—\$450 to \$549—showed the lowest rate of all among the foreign born.²⁷

Among the foreign-born white families, more babies in this wage group were breast fed through the earlier months and fewer were artificially fed throughout the first nine months than in the group under \$450 or in the groups between \$550 and \$849.²⁸ This more favorable feeding would, apart from other factors, reduce the infant death rate for babies fed somewhat below the death rate for babies fed in the earnings groups between \$550 and \$849. It does not, however, account for the whole difference that appears, and, obviously, it has no relation whatever to the very low death rate for babies dying immediately after birth.²⁹

TABLE XVII.—Comparison of infant mortality in fathers' earnings group, \$450 to \$549 with that in the group \$550 to \$849, eliminating differences due to type of feeding; infants in foreign-born white families in the \$450 to \$549 group.

Type of feeding.	Actual deaths.	Expected deaths. ¹	Type of feeding.	Actual deaths.	Expected deaths. ¹
Total.....	28	39.7	Infants fed:		
Infants not fed.....	5	9.9	Breast.....	12	15.0
Infants fed.....	23	29.8	Mixed.....	3	6.0
			Artificially.....	8	8.8

¹ The "expected deaths" are computed from rates in \$550 to \$849 group for babies not fed, breast fed, mixed fed, and artificially fed.

Type of feeding and mortality in the several earnings groups.

In general, such variations as occurred in the prevalence of breast feeding or of artificial feeding in the several groups do not account for high rates in the poorer families and low rates among the well to do, but tend, on the contrary, to obscure the actual differences in hazard. For example, in the native white families of the "under \$450" group, where the rates were highest, there were during the early months, which are the period of greatest hazard, a higher percentage of babies breast fed and a lower percentage artificially fed than in the native white families of any other earnings group. Only after the sixth month did the percentage breast fed in this earnings group drop below the average for all earnings groups combined. And the fewest babies were breast fed and the greatest number were artificially fed in the highest earnings group—\$2,250 to \$2,849, and \$2,850 and over—where the rates were very low.²⁸

²⁷ For detailed tabulation see Table 78, Appendix VII, p. 286.

²⁸ See Table 80, Appendix VII, p. 288.

²⁹ See Tables 79 and 82, Appendix VII, pp. 287 and 289.

Again, dividing all the native white families into two approximately equal groups, with fathers earning under \$850 and fathers earning \$850 and over, the infant mortality rate in the poorer group (112.7 per 1,000) was considerably above the rate (69.0 per 1,000) in the group with higher earnings. But the percentages breast fed, month by month, were almost identical in the two groups. The one difference, that there was more artificial feeding in the "\$850 and over" group and more mixed feedings in the "under \$850" group, would reduce the rate in the poorer families below the rate among the more well to do if other factors were not involved.

What, then, of the commonly held opinion that if all babies received the mother's milk and no other food through the first nine months of infancy the excessive mortality among the babies in the poorest families would disappear? In the Baltimore study, the Children's Bureau is, for the first time, discussing numbers large enough to permit a detailed analysis of rates in relation to the earnings of the father, the race and nativity of the mother, and the type of feeding given to the infant. This analysis confirms the theory that the rates for breast-fed babies at each economic level are below the rates for artificially-fed babies in homes of the same economic level; but it shows that while the rates for breast-fed babies in the poorest homes (61.8 per 1,000 fed) were below the average rates for all babies studied in Baltimore (80.5 per 1,000 fed) they were far above the rates for breast-fed babies in families that were well to do (13.3 per 1,000 fed).²¹

TABLE XVIII.—*Infant mortality rates, by earnings of father and color and nativity of mother; infants artificially fed.*^a

Earnings of father.	Computed annual rates ^a for artificially-fed infants.			
	All mothers.	Native white mothers.	Foreign-born white mothers.	Colored mothers.
Total.....	191.4	160.8	232.1	347.3
Under \$550.....	310.1	289.9	274.1	387.9
\$550-\$849.....	185.4	178.8	198.9	} 282.4
\$850-\$1,249.....	117.3	109.6	} 109.7	
\$1,250-\$1,849.....	130.1	104.2		
\$1,850 and over.....	27.5	26.0		

^a The method by which an annual rate per 1,000 infants fed is computed from the monthly rates for babies artificially fed, mixed fed, or breast fed during the first month, the second month, etc., is shown in Appendix V, p. 199.

²¹ See Table 60, Appendix VII, p. 276.

TABLE XVIX.—*Infant mortality rates, by earnings of father and color and nativity of mother; breast-fed infants.*¹

Earnings of father.	Computed annual rates ¹ for breast-fed infants.			
	All mothers.	Native white mothers.	Foreign-born white mothers.	Colored mothers.
Total.....	43.3	32.7	50.2	90.2
Under \$550.....	61.8	39.0	63.8	91.4
\$550-\$849.....	46.1	39.6	51.1	} 88.0
\$850-\$1,249.....	22.5	20.2	} 20.9	
\$1,250-\$1,849.....	23.2	29.2		
\$1,850 and over.....	13.3	15.6		

¹ The method by which an annual rate per 1,000 infants fed is computed from the monthly rates for babies artificially fed, mixed fed, or breast fed during the first month, the second month, etc., is shown in Appendix V, p. 199.

The variations in rates between the poorest and the most prosperous were greater among the artificially-fed babies than among the breast-fed babies, and the rates for artificially-fed babies descended in an unbroken line from one earnings group to the next in each of the three race and nativity groups. But the contrasts in rates between the poorest and the most prosperous were quite definite even among the breast-fed babies. In the native white families, the rate for breast-fed babies was more than twice as high in the families "under \$550" as in the families "\$1,850 and over," but the downward curve in the rate was broken by a slight rise in the group \$1,250 to \$1,849.

How do these rates compare with the rates for all babies having all types of feeding? The total death rate in Baltimore for the 10,528 babies living long enough to be fed at all was 80.5 per 1,000 infants fed. The rates for breast-fed babies in the poorest homes—except in the colored families—were below this average rate for the community but also above the rates for breast-fed babies in the most prosperous homes; and, it should be noted, the artificially-fed babies in the most prosperous homes showed a far more favorable rate than the breast-fed babies in the poorest homes. Three simple computations of what the infant mortality in Baltimore might have been if all the babies had been exposed only to such hazards as the more favored babies had to meet, illustrate the interplay of infant feeding and economic conditions as factors in preventable mortality.

(1) If the infant death rate of 43.3 per 1,000 infants fed, which was the average for all breast-fed babies in Baltimore, had been the death rate among all the 10,528 babies who lived long enough to be fed, the total number of deaths among babies fed would have been approximately 456 instead of 848, and the total number of deaths in the entire group (including the 269 who died immediately after birth without being fed at all) would have been approximately 725

instead of 1,117; and 392, or 35 per cent of those who died, would have been saved.

(2) If the infant mortality rate (including all types of feeding and babies not fed at all) among the 431 babies born in families where the father earned at least \$1,850 had been the rate for the entire group of 10,797 babies, the total number of infant deaths would have been approximately 401 instead of 1,117; and 716 babies, or 64 per cent of those who died, would have been saved.

(3) But if the rate, lower than either of these, for breast-fed babies in the most prosperous families, and the rate in these families of deaths immediately after birth before the infant was fed at all, had been true for the entire group in Baltimore, then 175 instead of 269 babies would have died immediately after birth; and among the 10,622 who would have survived long enough to be fed 141 would have died during the year. The total deaths would have been 316 instead of 1,117; and 801 babies, or 72 per cent of those who died, would have been saved.

TABLE XX.—*Potential saving in infant mortality in Baltimore; live births in 1915.*

I. IF ALL BABIES HAD BEEN BREAST FED THROUGH THE FIRST NINE MONTHS (OR UNTIL DEATH WITHIN THAT PERIOD).

	Infants.	Potential.		Actual deaths.
		Rate.	Deaths.	
Total.....	10,797	.....	725	1,117
Not fed at all.....	269	.....	269	269
Fed.....	10,528	43.3	456	848

II. IF ALL BABIES HAD FACED THE HAZARDS TO BABIES (TYPE OF FEEDING DISREGARDED) WHOSE FATHERS EARNED \$1,850 OR OVER.

Total.....	10,797	37.1	401	1,117
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III. IF ALL BABIES HAD FACED THE HAZARDS FACED AT BIRTH AND BY BREAST-FED BABIES AFTER BIRTH, IN FAMILIES WHERE FATHERS EARNED \$1,850 OR OVER.

Total.....	10,797	.....	316	1,117
Live births and deaths at birth.....	10,797	16.2	175	299
Infants fed and subsequent deaths.....	10,622	13.3	141	848

Living conditions affecting mortality in the poorer families.

The higher mortality among babies living in the poorest families, even when exclusively breast fed, is not easily explained. It is doubtless due in part to social conditions associated with but not due to poverty and in part to conditions for which poverty is itself a cause. It is not easy to separate these two classes of conditions nor

to determine the extent to which poverty itself may be a direct factor in increasing the hazards to babies.

Certain social conditions that raise the infant mortality rate were more commonly present in the poorest families than elsewhere, but even here they were not universal.³² In the poorest families, where the fathers earned under \$450 during the year, the most prevalent unfavorable social factors were room congestion and employment of mothers away from home; but more than one-half of the poorest mothers were not so employed during pregnancy or within 12 months after the birth of a baby in 1915, and more than one-fourth of these babies who lived at least two weeks were in dwellings having more rooms than there were persons in the household. Large families and short intervals between births were slightly more prevalent in poor homes than in prosperous homes, but less than one in four of the babies whose fathers earned under \$450 was seventh or later in order of birth and less than one in four followed a brother or sister born less than two years before.

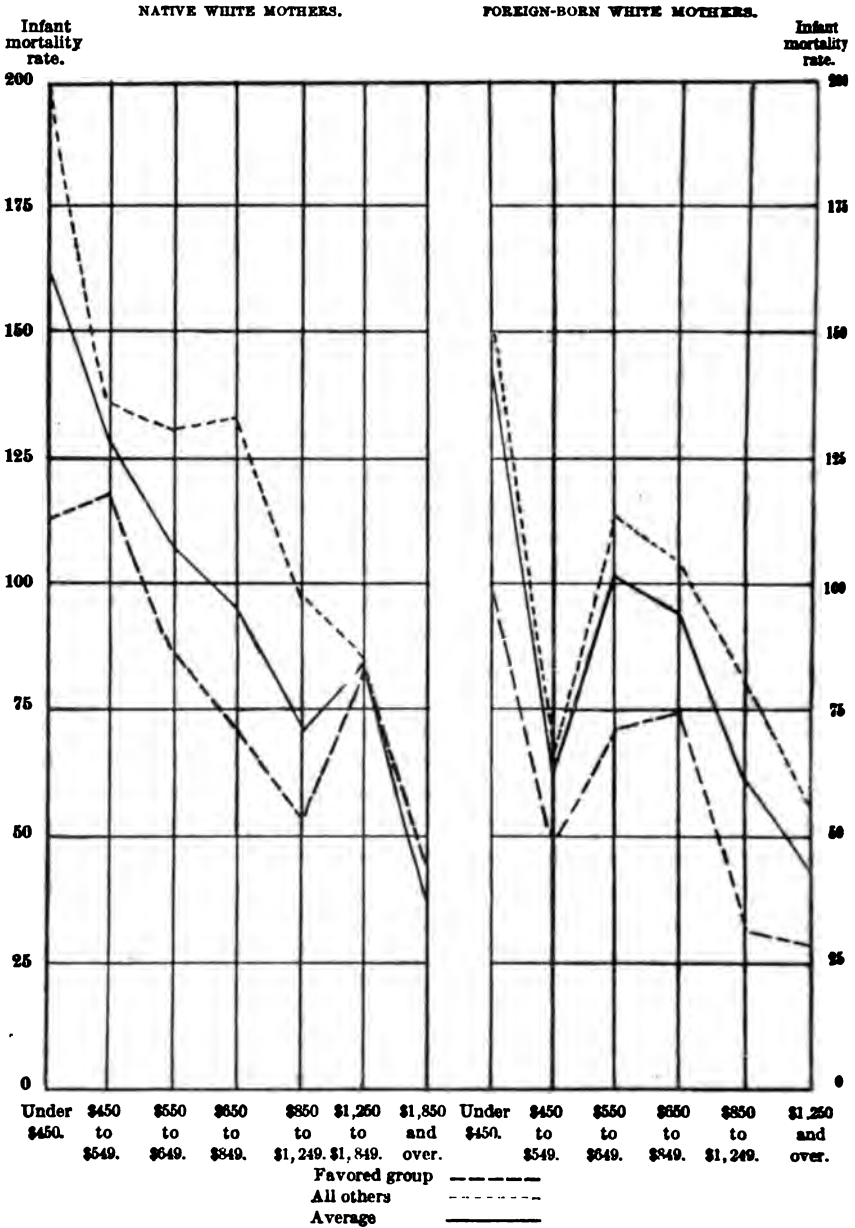
Poverty may also be associated with lack of intelligence or with ignorance on the part of the mother of the best methods of caring for her baby. Perhaps the most serious aspect of ignorance in caring for the baby is that it may lead to the early substitution of artificial for natural feeding. But in this respect the mothers in the poorer groups, as already discussed, are not handicapped, since the proportion of infants breast fed is greater in the low earnings groups than in the higher. In other respects, however, ignorance of the proper intervals between feedings, ignorance of the importance of cleanliness, of the importance, if artificial feeding is adopted, of adapting it to the needs of the baby, ignorance of when it is advisable to consult a physician—ignorance of these things may prove disastrous to the baby's life. Such ignorance is doubtless more prevalent among the poorer mothers; the old theory that all mothers know by instinct the best methods of caring for their babies is no longer held; and it is obvious that the more well-to-do mothers have access to facilities for education in respect to the best methods of infant care and may secure competent medical advice and nursing care to supplement their own efforts which the poor mother can not secure.

In one important point, in respect to the illiteracy of the mother, the data of the study offer definite information. While illiteracy may not always be associated with ignorance in regard to infant care, yet it is probable that it usually is so associated, since the illiterate mother is wholly dependent upon oral tradition and advice. In the poorest families, those in which the fathers earned under \$450, 23 per cent of the mothers were illiterate as compared with less than 1 per cent in families where the fathers earned \$1,850 or over.

³² Compare Tables 90, 102, 127, 137, and 154, Appendix VII, p. 293, 304, 332, 338, and 349.

INFANT MORTALITY, BALTIMORE, MD.

CHART XIV.—Infant mortality rates, by fathers' earnings among infants of "favored group" and all other infants.



The effects upon infant mortality of these conditions associated with poverty—illiteracy of the mother, her employment away from home, large families, and short intervals between births—can be eliminated to a large extent by examining the mortality rates in a favored group in which none of the most unfavorable conditions are present, and in which therefore the influence of poverty as distinct from these conditions is revealed. Eliminating all families where the mother was employed away from home or was illiterate, or where the 1915 baby was seventh or later in order of birth or followed a preceding birth by an interval of less than two years, a "favored group" is formed which includes 22 per cent of the live births in families where the father earned under \$450 and 40 per cent of the live births in families where the father earned under \$850. In this favored group, the contrast in rates between the poorest and the most prosperous families is slightly less sharp than in all the families combined, but the same general trend persists—the infant mortality falls as the fathers' earnings rise.³³

TABLE XXI.—*Infant mortality in first favored group by earnings of father; infants of native white mothers.*

Earnings of father.	Total.		Favored group. ¹	
	Live births.	Infant mortality rate.	Live births.	Infant mortality rate.
Under \$450.....	449	164.8	185	113.5
\$450-\$549.....	644	128.9	301	119.6
\$550-\$649.....	908	107.9	492	87.4
\$650-\$849.....	1,726	95.6	1,063	72.4
\$850-\$1,249.....	1,802	69.9	1,175	54.5
\$1,250-\$1,849.....	629	84.3	453	83.9
\$1,850 and over.....	366	38.3	281	46.3

¹ From this group have been eliminated mothers employed away from home and illiterate mothers, and infants who were seventh or later in order of birth or who had followed a preceding birth by an interval of less than two years.

Eliminating not only these social factors but room congestion as well, the favored group is further reduced and includes only 11.5 per cent of the infants surviving two weeks whose fathers earned under \$450 and 26.3 per cent of the infants surviving two weeks whose fathers earned under \$850. But the favored group is still large enough to permit a comparison of infant death rates by fathers' earnings, and again the same trend persists—the death rate falls as the fathers' earnings rise.³⁴

³³ To eliminate complications arising from differences in race, figures are shown in the table for infants of native white mothers only. For detailed tabulations see Tables 78 and 83, Appendix VII, pp. 296 and 290.

³⁴ To eliminate complications arising from difference in race, figures are shown in the table for infants of white mothers only. For detailed tabulation see Tables 84 and 90, Appendix VII, pp. 290 and 293.

TABLE XXII.—*Infant mortality in second favored group by father's earnings; infants of white mothers who lived at least two weeks in dwelling of residence.*

Earnings of father.	Total.		Favored group. ¹	
	Infants.	Deaths per 100.	Infants.	Deaths per 100.
Under \$450.....	964	11.1	113	7.1
\$450-\$549.....	1,052	6.8	132	5.7
\$550-\$849.....	3,490	6.4	1,146	4.0
\$850-\$1,249.....	2,142	4.1	1,025	2.6
\$1,250 and over.....	1,156	2.4	704	2.1

¹ From this group have been eliminated mothers employed away from home and illiterate mothers and infants who were seventh or later in order of birth or who had followed a preceding birth by an interval of less than two years, and infants in dwellings with one or more persons per room.

Poverty as a direct factor in infant mortality.

Evidently there are other unmeasured factors which make poverty—or lack of means—a hazard to infant life apart from the size of the dwelling, the size of the family, the interval between births, and the illiteracy or the gainful employment of the mother. Low income may itself be a factor in infant mortality.

An important way in which lack of means handicaps mothers in caring for their babies is in the purchase of competent medical care and supervision and nursing service. Such medical care and supervision is necessary not only during the mother's pregnancy but also during the infant's first year of life. The disadvantages of poverty in this respect, however, are to a certain degree removed by provision of infant-welfare stations and free consultation centers which are open to the poor as well as to the well to do. But the highest percentages of mothers reporting examination and instruction by physicians during pregnancy and medical and trained nursing care at confinement were found in families where the fathers earned at least \$1,850, and the lowest percentages were found in one or another of the earnings groups under \$850. The extent to which the poorest mothers took advantage of free medical supervision and care is shown by the fact that the lowest percentages receiving care were in no case found among the families in which the fathers earned the least (under \$450). But the provision of free care does not solve the problem for the poorer mothers since throughout the study the highest mortality rates were found in this lowest earnings group.

Lack of means is a further handicap in an attempt to fortify and maintain health through good food, fresh air, rest, and recreation, as recommended by health authorities. During pregnancy and the nursing period the mother should have plenty of nourishing food, including a generous proportion of fresh fruits and vegetables, and should drink plenty of good milk. But the mother who is constantly striving to make ends meet on a meager income may be forced to stint herself or her children in order to provide food to maintain the

physical efficiency of the breadwinner of the family. She should have her teeth cared for by a good dentist; but she is probably unable to pay for such care. She should have pleasant exercise and recreation and spend at least two hours of each day in the open air; she should avoid worry and fatigue; she should sleep at least 8 hours out of the 24. But her day may be filled with worries of making ends meet, and with busy work patching up clothing for the different members of the family that they may appear at least respectable, preparing meals, caring for the children, besides trying to do all the housework; it may be physically impossible for her so to arrange her time and work—and the household conveniences which lighten the toil and shorten the hours of housework can not be obtained without money—that she may carry out these excellent recipes for her own health and that of her baby. For the baby the house should be sunny, well ventilated, and dry; his room should be not too hot nor too cold, not too light nor too noisy. On a limited income it will be difficult to rent a dwelling which meets all these requirements. The baby should have clean, comfortable clothing, a good bed, and suitable coverings. Even the cleverest and most diligent mother can not provide all these things from an empty purse.

Poverty, therefore, through lack of means to provide the physical essentials for health, as well as to procure medical and nursing assistance when needed, appears to have a direct influence upon the infant mortality rate.

Summary.

It appears, then, that the highest infant mortality was found in the families where the father's earnings were lowest, and the lowest infant mortality where the fathers' earnings were highest, and in general the rates for the several causes of death decreased, with the total rate, as the father's earnings rose. Two minor exceptions to this general rule appear in the Baltimore material—a low rate (especially from diseases of early infancy) in the \$450 to \$549 group among the foreign born, and a break in the downward curve from diseases of early infancy in the \$1,250 to \$1,849 group among the native white.

The importance of breast feeding in reducing mortality was apparent in the differences between the rates for breast-fed babies and for artificially-fed babies in the poorest homes. But the rates for breast-fed babies also varied with the father's earnings, and it is to be noted that the artificially-fed babies in the most well-to-do homes had a lower mortality than the breast-fed babies in the poorest homes.

Certain unfavorable living conditions were more commonly present in the homes where the father's earnings were low than elsewhere, but a "favored group" from which had been eliminated all babies

whose mothers were employed or were illiterate, all babies who were seventh or later in order of birth or who had followed a preceding birth by less than two years, and all babies living in congested dwellings, showed a marked decrease in mortality from the lower earnings groups to the higher.

Prenatal instruction and supervision of the mother and medical and nursing care at confinement were not universal in any earnings group, but they were reported by more mothers in the most prosperous families than at any lower economic level. That the absence of care and instruction was not the chief cause of high mortality in the poorer homes is evident, however, from the fact that relatively more mothers reported trained care and instruction in the lowest earnings group than in the groups slightly higher in the scale. But, uniformly, the mortality was highest in these poorest homes.

The sheer absence of means with which to supply the necessities of wholesome living seemed to be itself a factor in mortality.

NEIGHBORHOODS, DWELLINGS, AND INFANT MORTALITY.

The physical environment into which the babies were born is difficult of measurement and tabulation. The babies can be grouped according to the ward in which their families lived and the room congestion and sanitary equipment of the dwelling, but such important items as dryness, ventilation, and cleanliness of the dwelling, and the condition of the street and yard, can not be touched upon in the present study. Moreover, in every community the condition of neighborhoods and dwellings is primarily determined by the means of the families and, to a slighter degree, by their traditions and habits. It has been noted, for example, that overcrowding in the homes was directly related to the fathers' earnings but that the foreign-born families reported more room congestion than the native white families, even when groups with identical earnings are compared.³⁵

So far, therefore, as environment can be measured, the effect of environment upon mortality must be considered as secondary to the relation of poverty and of nationality to mortality.

Wards.³⁶

In discussing the relation of wards to infant mortality, two separate questions are involved: First, Where in Baltimore were the babies living who faced the greatest hazards? and, second, What was the effect of neighborhood conditions on infant mortality apart from other factors such as poverty and differences in conditions within the home?

³⁵ See Table 37, Appendix VII, p. 252.

³⁶ The classification by wards is based on the dwelling in which the infant spent the greater part of his life up to 1 year of age. If a period was equally divided between two dwellings, the dwelling occupied during the time nearer the birth is used. In the case of babies dying under 2 weeks of age (or stillbirths), the ward refers to the house in which the mother spent the greater part of her pregnancy.

Four wards in Baltimore had infant mortality rates above 130 per 1,000. The second ward, a low-lying district on the water front, where the foreign born predominated and more than two-fifths of the births were to Polish mothers, had a total infant mortality of 140.3 per 1,000, chiefly due to an excessive mortality from gastric and intestinal diseases. The seventeenth ward, lying on higher ground to the northwest of the business center, where about three-fourths of the births were to colored mothers, had a total infant mortality of 146.8 per 1,000, chiefly due to an excessive mortality from the diseases of early infancy. The twenty-first ward, the most western of the wards bordering the river, with congested blocks and less settled blocks, foreign-born and native families, very poor families and families of average means, had a mortality rate of 136.5 per 1,000, chiefly due to a high mortality from gastric and intestinal diseases. The twenty-second ward, a very poor ward on the water front, with crowded blocks of the foreign born toward the west and a negro colony toward the east, had an excessive mortality from gastric and intestinal diseases and from respiratory diseases, but a relatively low mortality from the diseases of early infancy. The total rate in the twenty-second ward (134.1) was practically the same as the rate in the twenty-first ward.

Ward rates do not offer a satisfactory index to the neighborhoods in which babies were facing excessive hazards. In many parts of Baltimore the limits of a single ward included a marked variety of neighborhoods, with alleys and streets, the homes of the rich and the homes of the poor, grouped together in the ward unit. The high mortality of a neglected neighborhood may have been balanced by the low mortality of a well-conditioned neighborhood within the same ward. The average for a ward may, therefore, conceal a genuine contrast which it is impossible to trace from the data in the present study.³⁷

³⁷ See the general discussion of this in the section on "Baltimore," p. 23ff. The most obvious example of contrasting conditions within the wards was found in the six wards in which 5 per cent or more of the babies were born in families where the father earned at least \$1,850. In each of these six wards the relatively high percentage of well to do families was balanced by a higher percentage of families in which the father earned less than \$650. And in four of these six wards the percentage of colored births was considerably above the percentage of colored births in the city as a whole, and more of the babies in the ward were born into colored families than into well to do white families—see especially p. 26.

Color of mother and earnings of father.	Live births in specified ward of residence.							
	The six.		11	12	13	14	15	16
	Number.	Per cent.						
Total.....	2,307	100.0	145	409	449	289	598	417
\$1,850 and over:								
White mothers.....	284	12.3	28	70	42	26	89	29
Colored mothers.....	2	0.1				1	1	
Under \$650:								
White mothers.....	326	14.1	8	66	117	26	54	45
Colored mothers.....	378	16.4	60	43	5	107	98	65
All other:								
White mothers.....	1,185	51.4	88	212	284	78	315	258
Colored mothers.....	132	5.7	11	18	1	51	31	20

That there were undoubtedly blocks, or districts, outside of wards 2, 17, 21, and 22 where mortality was also far above the average for all is indicated by the extent to which the three groups in the population whose mortality was especially high were gathered in other wards. Fifty-four per cent of the Polish babies, 78 per cent of the Negro babies, and 77 per cent of all babies in white families where the father earned less than \$450 lived outside these four wards, but the total mortality among these babies was excessive not only in the four wards with high mortality rates but also in the remainder of the city.

TABLE XXIII.—*Relative mortality, by ward groups, in selected nationality and earnings groups; live births in 1915.*

Earnings of father, color and nationality of mother.	The four wards (2, 17, 21, 22).		The other wards.	
	Live births.	Infant mortality rates.	Live births.	Infant mortality rates.
Polish mothers.....	288	180.6	337	148.4
Colored mothers.....	293	170.6	1,012	144.1
White mothers in families where father earned under \$450	242	165.3	796	149.7

Is there, then, no distinctive relation between neighborhood conditions and mortality, apart from the economic status of the family and living conditions within the home?

The ward rates in the present study illustrate the difficulty of demonstrating the relation which many students of infant mortality have thought to exist between infant mortality and lack of drainage and sanitation and dirty streets—in other words, the city house-keeping in any given district and the lot congestion and absence of sunlight and open spaces. The families living in ill-favored neighborhoods are usually the poorest, whose babies suffer from other known hazards of poverty. Or, if they have a small margin of income, they accept an ill-favored neighborhood because they consider other things more essential than an improvement in living conditions either within or without the home. And, vice versa, most of the very poor families live in ill-favored neighborhoods. In Baltimore, at least, there was no basis for comparing families in ill-favored neighborhoods with families of the same nationality and similar poverty in well-conditioned neighborhoods. No evidence can be offered as to whether in Baltimore neighborhood conditions were an independent factor in mortality, apart from the influence of poverty, racial customs, and conditions within the dwelling.

For example, only two of the four wards—the twenty-first and the twenty-second—with a mortality above 130, markedly above the

average for all wards, had an excess that is not accounted for by the inclusion within the ward of nationality and earnings groups with high mortality rates.³⁸ But keeping in mind the difficulties of analysis stated above, it is apparent that this fact offers no evidence either for or against the independent effect of neighborhood. The apparent absence of high mortality in certain other conspicuously unfavorable districts also proves nothing. For example, the Locust Point district is merged in the tabulation with the western part of the twenty-fourth ward. The third ward had an average rate, although it closely resembled the second ward in housing and the condition of the streets and yards; but the third ward had a considerable percentage of births to Jewish mothers who managed, always, to protect their babies to an amazing degree. The seventeenth and eighteenth wards had a higher percentage of dwellings that lacked sewer connection than any other wards in the center of the city; but in neither ward was the mortality from gastric and intestinal diseases exceptionally high.

Another element in mortality according to wards is infant-welfare work, which should tend to reduce the mortality in districts where the work is well developed. The fifth ward, for example, which was one of the poorest in the city, had the lowest infant mortality rate in any ward. The large Jewish population in this ward accounts for part, but only for part, of the difference between the fifth ward and the average for all. The chief factor seems to have been the exceptionally high percentage of mothers having fairly good prenatal care and of infants having supervision.³⁹ In the seventeenth and eighteenth wards and in the twenty-fourth ward the percentage having regular supervision from infant-welfare agencies was also above the average for the city, and in the third ward more mothers and babies had such care and supervision than in the second ward. But in none of these wards except the fifth did more than one baby in five have regular supervision from infant-welfare agencies.

The essential facts in the present study seem to be that (1) while only four wards showed, as a whole, excessively high mortality either from all causes or from one or more specified groups of causes, the same excessive hazard was present in all districts representing the same standard of living; (2) the Jewish families had a low rate even in unfavorable surroundings; (3) the effect of neighborhood as distinct from economic status can not be either proved or disproved from the present data; (4) certain of the wards in which surroundings were unfavorable showed a relatively high development of infant-

³⁸ See Table S7, Appendix VII, p. 202.

³⁹ Grades A and B, prenatal care, 38.1 per cent; regular supervision from infant-welfare agencies, 34.6 per cent. For grades of care, see pp. 208 to 210. But note that the rate in the fifth ward (65.7) is almost twice as high as the rate in families where the fathers earned \$1,550 or over.

welfare work and an average mortality, instead of excessive mortality, from gastric and intestinal diseases; (5) but not even the fifth ward with its high percentage of Jewish mothers and excep-

CHART XV.—Death rates among infants surviving two weeks, by fathers' earnings and room congestion.



tional development of infant-welfare work had a rate approaching the very low rate among babies in the most prosperous families throughout the city.

Dwellings.

In relation to room congestion and lack of sanitation there was more definite evidence that low standards reacted unfavorably upon the baby.⁴⁰ These conditions were, of course, chiefly prevalent in poor homes, but a comparison of the infants in crowded and poorly equipped dwellings with other infants in families at the same economic level showed a higher mortality in the crowded and poorly equipped dwellings than elsewhere.

Room congestion.—Of the infants in native white families who lived at least two weeks, 2,344 were in dwellings with one or more persons per room—107 of these in dwellings with two or more persons per room. The death rate among the infants whose families lived in dwellings with more rooms than persons in the household was 4.6 per 100 infants surviving two weeks; in dwellings with one person but less than two persons per room, the death rate was 8.6 per 100 infants, and in dwellings with two or more persons per room it was 14 per 100.⁴¹

TABLE XXIV.—*Excess mortality in overcrowded dwellings, when effect of differences in fathers' earnings is eliminated; infants born in 1915 to native white mothers, who lived at least two weeks in dwellings with specified number of persons per room.*

Earnings of father.	Deaths per 100 infants (native white mothers) who lived at least 2 weeks in dwellings with specified number of persons per room. ¹		
	Less than 1.	1 but less than 2.	2 or more.
Total.....	4.6	8.6	14.0
Under \$450.....	7.5	15.1	
\$450-\$549.....	7.1	9.6	
\$550-\$649.....	6.9	8.3	
\$650-\$849.....	4.5	7.8	
\$850-\$1,249.....	3.8	5.8	
\$1,250 and over.....	2.7	3.4	

¹ Not shown where base is less than 100.

At each earnings level, the death rate was lowest in the least crowded dwellings. The families of the 107 infants in dwellings with two or more persons per room were so distributed among the several earnings groups that even in the lowest group their number was too small to justify the computation of a death rate according to father's earnings. It may be noted, however, that the average death rate among these 107 infants, for all earnings groups combined, was higher than the death rate in any earnings group except the

⁴⁰ The housing tables are based on infants who had survived the first 2 weeks of life and the dwellings in which each lived the greater part of his life. The possible effect of housing on the condition of the mothers or infants immediately after birth is not considered. Of the infant deaths in Baltimore 35.8 per cent occurred within 2 weeks after birth, and such deaths are almost entirely assigned to natal and prenatal causes.

⁴¹ For detailed tabulation see Table 90, Appendix VII, p. 293.

poorest among the infants in dwellings with one person but less than two persons per room.

A fair measure of the effect of room congestion upon mortality in the native white families is afforded by comparing the actual number of deaths—208—among the 2,344 infants of native white mothers living in dwellings with one or more persons per room, with the number of deaths that would have occurred among them—approximately 133—if they had been exposed to the hazards indicated by the rates in families at the same economic levels in dwellings with more rooms than persons in the household.⁴² The total mortality among babies in native white families was 6.1 per 100 infants surviving the first two weeks and 95.9 per 1,000 live births. If the excess deaths among babies in dwellings with one or more persons per room had been eliminated, the total mortality would have been reduced to 4.9 per 100 infants surviving the first two weeks and 84.7 per 1,000 live births.

In the same way among the colored babies the death rate in families living with less than one person per room was 8.1 per 100 infants surviving the first two weeks and 12.4 in families living with one or more persons per room. That is to say, 82 deaths occurred in the congested dwellings instead of the 54 deaths which would have occurred if these babies had faced the hazards of babies in other dwellings.⁴³

The total colored mortality was 10.7 per 100 infants surviving the first two weeks and 158.6 per 1,000 live births. If the excess deaths among babies in dwellings with one or more persons per room had been eliminated, the total rates would have been 8.4 per 100 infants surviving the first two weeks and 137.2 per 1,000 live births.

Among the foreign-born families, the difference in mortality according to the room congestion was less than among the native white families, ranging from 4 per 100 infants surviving two weeks in households with less than one person per room to 10.5 per 100 infants in households with two or more persons per room. In this group of most congested households, more than half were Polish, and the differences in nationality distribution within the least congested and the most congested groups would by themselves, apart from the room congestion, account for the part of the difference in mortality, but the actual difference (from 4 to 10.5) is somewhat greater than the expected difference (from 5.5 to 8.6). Again, part of this excess may be accounted for by the higher earnings in the families living with

⁴² See Table 86, Appendix VII, p. 291.

⁴³ Variations in distribution by earnings were disregarded in this comparison, since the general level was low in both groups of colored families, and "2 or more per room" were combined with "1 but less than 2," since their number (48) was too small to serve as the base for a rate. See Table 90, Appendix VII, p. 293.

less than one person per room, where the median was between \$650 and \$850, while the median in the families living with two or more persons per room was between \$450 and \$550. Disregarding the differences in nationality distribution, computations of the deaths expected in these two groups from the earnings of the fathers show that, apart from room congestion, a somewhat higher mortality would be expected in the congested households from the greater poverty of the families. Again, however, the actual difference between the families with less than one person per room and the families with two or more persons per room (from 4 to 10.5) was greater than the expected difference (from 5.4 to 7.6). Even if the difference due to variations in nationality and the difference due to poverty had been entirely distinct—and they were not—and the total expected variations in death rate might be fairly indicated by the sum of the two expected variations in rate, there would still be a margin of actual difference in rate unrelated to nationality and poverty.⁴⁴ Moreover, the rates for all Polish babies, all Jewish babies, etc., and the rates for all foreign-born families with the fathers' earnings under \$450, \$450 to \$549, etc., used in the computation of expected deaths are themselves weighted somewhat by the relatively high percentage of congested dwellings among the Polish families and in the lowest earnings groups, and, therefore, overstate the differences which can be attributed to poverty or to nationality apart from room congestion. It may be concluded that the babies of foreign-born mothers also met a greater hazard in congested dwellings than elsewhere, although the excess was far less marked (and more difficult to demonstrate) than the excess accompanying congestion in the native households.

Sanitary equipment.—The native families, both white and colored, showed a marked difference in the death rates among infants two weeks old and over according to the sanitary equipment of the dwellings. Three items were taken as index to the condition of the dwelling; a toilet connected with the sewer, a toilet for the exclusive use of the baby's household, and a bathtub. Dividing the babies into two groups, with the dwellings equipped with all three items in one group, and the dwellings lacking one or more of the three items in the other group, and comparing the families where the fathers' earnings were the same, it is found throughout, for the native white and the colored families, that the babies in well-equipped dwellings had a lower death rate than the babies in other dwellings. The difference appeared mainly in the deaths from gastric and intestinal diseases.

⁴⁴ Actual difference is 10.5 minus 4, or 6.5. Expected difference on basis of nationality is 8.6 minus 5.5, or 3.1, and expected difference on basis of fathers' earnings is 7.6 minus 5.4, or 2.2. 3.1 plus 2.2 is less than 6.5. See Tables 88 and 89, Appendix VII, pp. 292 and 293.

Only 35 Polish babies in a total of 597, and 80 Italian babies in a total of 394, lived in well-equipped dwellings, but the Jewish families and the "other foreign" group had a large enough number living in well-equipped dwellings to permit the computation of a death rate for the babies in these families separately. Among the Jewish babies, no difference appeared in the rate from gastric and intestinal diseases, but there was a slight excess in deaths from other causes in the poorer dwellings. Among the "other foreign" babies, the death rate was higher in the poorer dwellings than in the well-equipped dwellings, from gastric and intestinal diseases and from other causes also.⁴⁶

Summary.

It seems clear that physical surroundings do affect the welfare of the baby. The Baltimore data give new evidence that the crowded and insanitary home adds to the hazards of poverty and affects especially the mortality from gastric and intestinal diseases.

The Baltimore data afforded no satisfactory classification of neighborhoods and no clear evidence that neighborhood conditions are an independent factor in mortality apart from poverty and conditions within the home.

The low mortality in one poor ward, the fifth, with its exceptionally large percentage of mothers receiving trained care and instruction in maternal and infant hygiene, illustrates how mortality can be reduced in spite of unfavorable surroundings, but the rate in the fifth ward (65.7) was markedly higher than the rate (37.1) among the babies throughout the city whose fathers earned \$1,850 and over.

EMPLOYMENT OF MOTHERS AND INFANT MORTALITY.

The infant mortality rates among babies of mothers who worked outside their homes were higher than the rates among other babies. The working mothers represented, in the main, poorer homes, and the proportion of Polish and Negro mothers was higher; but even after due allowance was made for the higher infant mortality expected in a group so constituted, there remained an excessive mortality which seemed to be related to the fact of the mother's employment away from home.

In the present study, there are three sets of data on infant mortality and the mothers' employment:

First, concerning employment at home and outside the home during the pregnancy of 1915.

Second, concerning employment at home and outside the home during the first 12 months after the birth of 1915.

Third, concerning employment outside the home at any time during the mother's life.

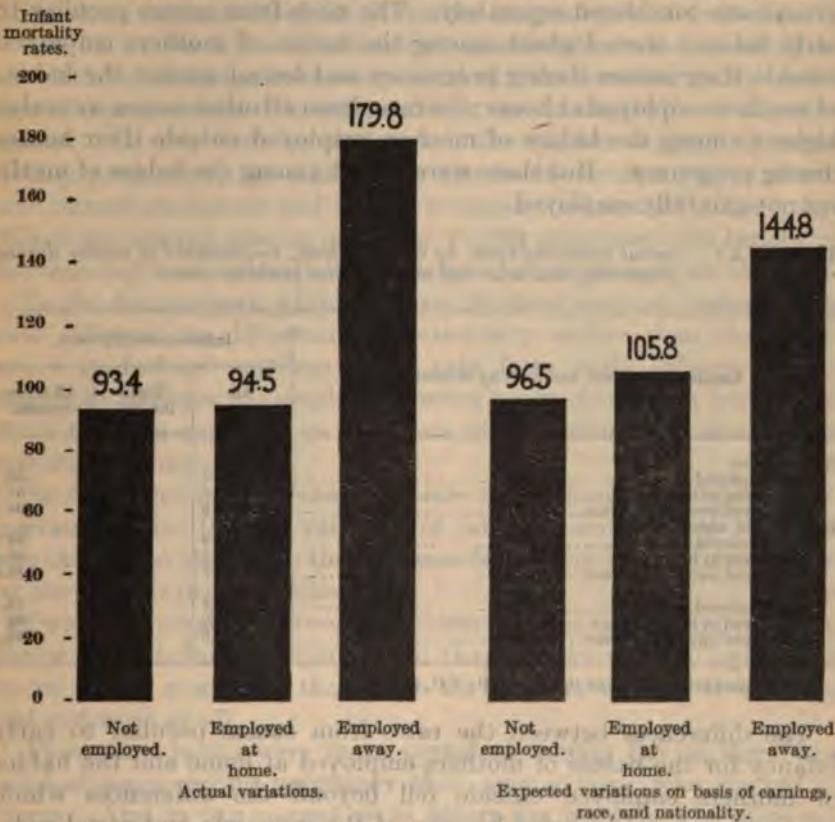
⁴⁶ See Table 91, Appendix VII, p. 294.

From the first two sets of tables are derived infant mortality rates based on the births of 1915. From the third set of tables are derived rates based on all births to the mothers studied.

Employment during pregnancy of 1915.

It is difficult to disentangle the effect of employment during pregnancy and of employment during the first year of the baby's life, since three-fourths (76.3 per cent) of the mothers who worked during

CHART XVI.—Infant mortality rates, by mothers' employment during pregnancy; actual rates compared with rates expected on the basis of the fathers' earnings and the mothers' color and nationality.



pregnancy resumed work during the first year of the baby's life. But it is known that deaths assigned to "early infancy" always are related to the condition of the mother and the care she has received during pregnancy and confinement; therefore, such deaths may fairly be related to the mothers' employment or nonemployment during pregnancy.

The total infant mortality among the 7,883 babies of mothers not employed during pregnancy was 93.4 per 1,000—37.2 from the causes peculiar to early infancy and 56.2 from all other causes combined.

The total infant mortality among the 1,682 babies of mothers employed at home during pregnancy was 94.5 per 1,000—26.2 from the causes peculiar to early infancy and 68.4 from all other causes combined.

The total infant mortality among the 1,229⁴⁶ babies of mothers employed away from home during pregnancy was 179.8 per 1,000—57 from the causes peculiar to early infancy and 122.9 from all other causes combined.

Similar differences appear when each of the three race and nativity groups are considered separately. The rates from causes peculiar to early infancy were highest among the babies of mothers employed outside their homes during pregnancy and lowest among the babies of mothers employed at home; the rates from all other causes were also highest among the babies of mothers employed outside their homes during pregnancy. But these were lowest among the babies of mothers not gainfully employed.

TABLE XXV.—*Infant mortality rates, by cause of death, employment of mother during pregnancy, and color and nativity; live births in 1915.*¹

Employment, color, and nativity of mother.	Infant mortality rates.		
	All causes.	Early infancy.	All other causes.
Native white:			
Not employed.....	94.3	28.9	55.5
Employed at home.....	85.4	27.4	57.9
Employed away from home.....	140.8	46.0	94.8
Foreign-born white:			
Not employed.....	82.9	28.5	54.1
Employed at home.....	88.2	21.3	66.9
Employed away from home.....	183.3	64.3	119.0
Colored:			
Not employed.....	124.1	48.7	74.5
Employed at home.....	126.9	34.1	92.9
Employed away from home.....	201.8	59.6	142.1

¹ For detailed table, see Table 103, Appendix VII, p. 305.

The differences between the rates from causes peculiar to early infancy for the babies of mothers employed at home and the babies of mothers employed outside fell beyond the differences which might have been expected because of the economic and racial composition of the two groups and indicate a definite variation due to the fact and circumstances of employment.⁴⁷

Among the white mothers the predominating types of work done at home and away were quite different; and a marked difference in infant mortality rates would be expected, since the monotony and unbroken strain of a factory day are not comparable with the variety

⁴⁶ For the mothers of three babies no report as to employment during pregnancy was secured.

⁴⁷ See discussion of employment of mothers in section on Nationality and Mortality: *Social Factors*, pp. 83 and 89, and Table 104, Appendix VII, p. 306.

of work and the adjustable hours of the woman who is keeping lodgers. But among the negro women, for whom laundering was the chief occupation at home, and doing laundry work and char work was the chief occupation away from home, the differences in rates persist. This seems to indicate that it is not so much the fact of muscular exertion as the uninterrupted hours of a full day's work required in outside employment that is injurious during pregnancy.

Why the rates from causes peculiar to early infancy were lower among the babies of mothers employed at home than among babies of mothers not employed at all during pregnancy is not so clear.

In the native white families the variations in rate according to the fathers' earnings were more marked than in other groups both in the deaths ascribed to early infancy and in deaths from all other causes. It may well be that, when the mother worked at home during pregnancy, her addition to the family income was of direct and immediate benefit and tended to lessen the hazards to her baby. When she worked outside her home during pregnancy the benefit of her earnings was outweighed by the greater physical strain involved.

In the foreign-born white families the most marked variations in rate followed the differences in nationality rather than the differences in fathers' earnings. The rate from early infancy among babies of mothers not employed during pregnancy was a trifle lower than the rate expected on the basis of the nationality distribution within the group.

In the negro families the economic factor may have been of importance, since the general level of fathers' earnings was low, and yet there is no indication that the rate from early infancy was highest in the poorest negro families.

One fact remains quite clear, however: The rates from early infancy were definitely higher when the mothers worked away from home during pregnancy than when the mothers worked at home or did not work at all.

Premature births were more prevalent among the mothers who worked away during pregnancy than among those who worked at home. And in this respect as in others the mothers who were not gainfully employed fell between the other two groups. But the differences in the prevalence of premature births do not account for the differences in rates. Considering only the full-term live births, there were throughout—that is, for native white mothers, foreign-born white mothers, and colored mothers separately—the same differences in rates from early infancy—that is, the highest rates when the mothers were employed away from home and the lowest when they were employed at home.⁴⁸

⁴⁸ See Tables 105 and 106, Appendix VII, pp. 307 and 308.

The stillbirth rate varied also with employment and nonemployment during pregnancy except among the foreign-born white mothers. The native white mothers who worked away from home and the colored mothers who worked either at home or away from home had definitely higher stillbirth rates than the other native white and colored mothers. But in no group was the stillbirth rate materially lower when the mothers worked at home than when they did not work at all.⁴⁹

The mortality rates from all causes other than those peculiar to early infancy were excessive among the babies of mothers working away from home during pregnancy, and only in part was this excess accounted for by the greater poverty in these families. It seems to have been due in part, also, to the mothers' resumption of work during the first 12 months of the babies' lifetime. Of the mothers who worked outside their homes during pregnancy, 39 per cent of the white and 59 per cent of the negro resumed such work within 12 months of the birth. There may be, however, some further relation between mothers' employment away from home during pregnancy and the deaths during later infancy, but this can not be clearly determined.

It is commonly believed that if the working mother secures an interval of release from employment before confinement the work has a less harmful effect or no effect at all upon her own physical condition and upon the health of her child. In Baltimore 74 per cent of the mothers employed outside their homes during pregnancy had stopped work at least two weeks before confinement, and most of these, or 60 per cent of the total number of mothers so employed, had stopped two months or more before confinement. Relatively more of the colored mothers than of the white mothers employed away from home continued working until less than two weeks before the birth.⁵⁰

In the white group there was a definitely higher stillbirth rate, and in the colored group a definitely higher mortality rate for deaths under 1 month of age, when the mothers worked away with no interval of rest from employment before the birth or with only a short interval than when the mothers had stopped work at least two weeks before confinement. The same tendency, though less marked, appears in the stillbirth rates in the colored group, and the mortality rates under 1 month of age in the white group.

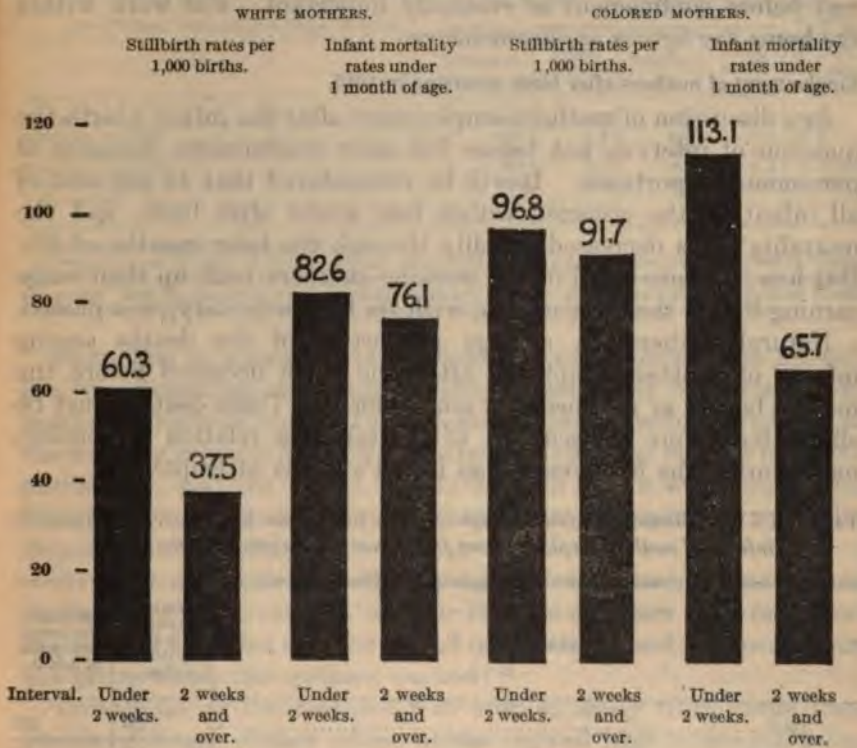
It should be remembered that the group who had stopped work before the last two weeks probably included far more than its proportionate share of the mothers who had suffered from some special disability or unfavorable symptom during pregnancy, and this would

⁴⁹ See Tables 103 and 104, Appendix VII, pp. 306 and 308.

⁵⁰ See Table 107, Appendix VII, p. 308.

tend to increase the losses in this group above the losses in the group who continued work. When, therefore, the losses in the group who stopped work are found to be either equal to or definitely lower than the losses in the group who continued until less than two weeks before confinement, it may fairly be concluded that the experience of the Baltimore mothers confirms the belief that a fair interval of rest

CHART XVII.—Infant mortality rates under 1 month of age and stillbirth rates, by interval between the mothers' cessation of work and confinement of mothers employed away from home during pregnancy.



from employment outside the home during the latter weeks of pregnancy is of great importance.

This unfavorable weighting of the group who stopped work appears plainly among the mothers employed at home. These mothers commonly continued work until less than two weeks before confinement, and 71 per cent of the white mothers and 54 per cent of the colored mothers working at home reported no interval whatever. Such work as the Baltimore mothers were doing at home seems not to have been physically injurious to the mother or the child, and, as has been noted, the babies born to mothers employed at home had lower infant mortality and stillbirth rates than the babies of mothers not gainfully employed. In the relatively small group of white

mothers who had been employed at home during pregnancy but had ceased their employment two weeks or more before their confinement, the stillbirth rate and the mortality rate under 1 month of age were relatively high. In the colored group the total number of mothers working at home during pregnancy was small, and the slight differences in rates between those who stopped work and those who continued are without significance.⁵¹

For gainful employment outside the home, a definite interval of rest before confinement is evidently important. For work within the home the figures are inconclusive.

Employment of mothers after birth occurring in 1915.

In a discussion of mothers' employment after the infant's birth the question of interval, not before but after confinement, becomes of paramount importance. It will be remembered that 43 per cent of all infant deaths occurred within four weeks after birth, and the mortality rates decreased steadily through the later months of life. But less than one-third of the working mothers took up their wage earning before this first month, with its high mortality, was passed.

Naturally, therefore, a large proportion of the deaths among infants of mothers employed after the birth occurred before the mother began, or resumed, her employment. These deaths must be eliminated before a discussion of mortality in relation to employment during the first year of an infant's life is attempted.

TABLE XXVI.—Deaths of infants by age at death in relation to mother's employment: infants of mothers employed away from home within year after the birth.

Age at death.	Mother employed only after death of infant.	Mother employed during life of infant.
Total.....	250	161
Under 1 month.....	142	2
1 month, under 3.....	40	13
3 months, under 6.....	43	54
6 months, under 12.....	25	87

From the 161 deaths occurring among the 2,784 babies of mothers who began, or resumed, employment during the infant's life, no single infant mortality rate can be computed to compare with a single infant mortality rate among the babies of mothers who did not work during the infant's life.

Instead, since the hazard for all babies surviving at the beginning of the second month, for example, was greater than the hazard for all babies surviving at the beginning of the seventh month, the

⁵¹ See Table 108, Appendix VII, p. 309.

hazards to babies of working mothers must be compared with those to all babies according to the month of age of the infant when the mother began, or resumed, her employment. Roughly, such a comparison is indicated in Table XXVII.

TABLE XXVII.—*Excess mortality among infants of mothers employed during infant's lifetime, when effect of differences in infants' ages is eliminated.*

Age of infant when mother began to work.	Mothers employed at home.		Mothers employed away from home.		Death rate ² all infants surviving at specified age.
	Infants.	Death rate. ¹	Infants.	Death rate. ¹	
Under 1 month.....	695	6.5	60	21.7	6.9
1 month, under 2.....	465	4.4	132	14.4	6.2
2 months, under 3.....	194	6.2	99	9.1	5.6
3 months, under 6.....	297	2.4	255	9.4	5.0 (4.4)
6 months, under 12.....	326	1.5	308	2.9	3.0 (2.2)
Not reported.....	12		1		

¹ Subsequent deaths in year per 100 infants.

² Death rate per 100 is based on total number surviving at beginning of specified period (except in "under 1 month" group, when it is based on number surviving the first 2 weeks) and total subsequent deaths in the group. But the two rates shown in parentheses are based on sum of survivors at beginning of each month in the period and the sum of the subsequent deaths in each of these monthly groups.

From this it appears that employment away during the infant's life was disastrous and employment at home was beneficial. But marked variations may have been due to some special weighting of the working group in relation to the father's earnings and the mother's nationality, and the extent to which these babies were breast fed. The question of the infant's age when the mother went to work also demands further analysis.

(1) How do the death rates among babies whose mothers worked during the first 12 months of their lifetime compare with rates corrected to the special distribution of nationalities and incomes within the group where the mothers worked?⁵²

Two-thirds of the mothers who worked away from home were Polish or Negro women whose babies showed high infant mortality rates throughout. Among these Polish and Negro babies there occurred 54 deaths, 16 more than the 38 deaths that would have occurred if these babies had faced only the average hazards to Negro and Polish babies of corresponding ages in Baltimore. The white mothers, other than Polish, who went out to work were mainly native born and the 20 babies who died in these families were more than twice as many as the number who would have died if they had been facing only the average hazards to white babies, other than Polish, in Baltimore.

More than two-thirds (70.6) of the babies whose mothers worked away from home during their lifetime were in families where the father earned less than \$550 during the year; barely 4 per cent were in the

⁵² See Tables 109, 110, and 111, Appendix VII, pp. 310-314.

families where the father earned as much as \$850. On this point no complete comparison with rates corrected for distribution of incomes is possible, but it is found that the actual deaths among babies of native white mothers and babies of negro mothers, where the fathers earned under \$850 and the mothers went out to work during the babies' lifetime, were more numerous than the deaths expected on the basis of the rates for all babies in all native white and negro families of corresponding earnings groups.

Among the mothers who worked at home during the baby's lifetime the percentage of Negro and Polish mothers was markedly lower than among the mothers who worked away, and about the same as the percentage of Negro and Polish women among those who were not employed at all during the baby's lifetime. The Jewish and Italian mothers, on the other hand, whose babies had relatively low mortality under all circumstances and who were almost entirely absent from the group which worked away during the baby's lifetime, constituted about 24 per cent of those who were employed at home. (In the group of mothers not employed at all during the baby's lifetime, the Jewish and Italian mothers formed about 11 per cent of all.) A comparison of the deaths which might be expected, on the basis of this favorable nationality distribution with those actually occurring, among babies of mothers employed at home during the baby's lifetime reveals but little difference for the group as a whole—92 deaths expected and 87 deaths occurring.

These mothers employed at home represented in general a higher economic level than the mothers employed outside. At least 25 per cent, instead of barely 4 per cent, had husbands earning \$850 or over. But they were still far below the economic level of mothers not gainfully employed. Again, on this point, no complete comparison is possible, but it is found that for all native white mothers employed at home whose husbands' earnings were known, the actual infant deaths, 30, were approximately the number expected, 32, on the basis of fathers' earnings. For colored mothers employed at home, the actual infant deaths, 16, were fewer than the number expected, 24, on the basis of the fathers' earnings.

Evidently, the mother's employment outside the home during her baby's lifetime involved some hazard which was distinct from the general conditions of poverty and which was not operative when the mother's work was done at home. Infant mortality seems to have been even a trifle lower when the mother worked at home during the baby's lifetime than when she was not employed.

(2) What is the relation between the age of the baby when the mother took up her employment and excessive or favorable death rates?

From the foregoing comparison, it appears that the earlier the mother had begun her work the greater was the excess of infant deaths among the babies of mothers employed away from home. This might result, quite apart from the effect of the mothers' employment, if the group of mothers going out to work before the baby was 3 months old represented families in which other conditions were more unfavorable to the baby than in the families where the mother took up her outside employment after 3 months. On three points the conditions in these groups can be compared: Race and nationality, fathers' earnings, and the extent to which the mothers were employed away during pregnancy. And this reveals in the "under 3 months" group a slightly higher percentage of babies of Polish mothers and Negro mothers; a higher percentage of fathers with the lowest earnings or none at all; and a markedly higher percentage of mothers employed away from home during pregnancy, than in the "3 months or over" group.⁵³

That the high percentage of mothers who worked away from home during pregnancy does not account for the greater excess in rate in the "under 3 months" group is plain, since this excess was approximately equal among the babies whose mothers had worked away from home during pregnancy and the babies whose mothers had not worked away during pregnancy. (It will be remembered that even among the mothers who went out to work within three months after the birth, comparatively few began their work during the first month, and most of the deaths from prenatal causes occur before the baby has completed a month of life.)

But the unfavorable weighting of the "under 3 months group" in the two other respects might account in part for the greater excess of infant deaths in this group. This excess, however, when the mother went out to work within three months did not appear uniformly throughout. Among the babies of white mothers other than Polish the number of deaths was more than twice the number expected, whether the mother began work within three months, or between three months and six months, or after the baby was 6 months old. In the Polish families the greatest excess of deaths occurred when the mothers went out to work after the baby's third month but before he was 6 months old. In the Negro group the excess appeared only among the babies whose mothers went to work during the first three months.⁵⁴

Where the mothers worked at home, the comparison of infant death rates with the death rates for all infants surviving at each month of life showed rates more favorable for the babies of working mothers than for others in the "3 months or over" group and not

⁵³ See Tables 112, 113, 114, and 115, Appendix VII, pp. 314-316.

⁵⁴ See Table 110, Appendix VII, p. 313.

in the "under 3 months" group. But in these families there was no such favorable weighting in the "3 months or over" group as in the families where the mothers worked outside their homes.⁵⁵ So, when the number of deaths in one group or the other was below or above the number expected, it reflects clearly some relation between the age of the infant when the mother began her work at home and the benefit or the hazard of the work. Turning to each of the race and nationality groups separately, it appears that in the native white, the Italian, and the "other foreign" families there was a slight excess over the expected number of deaths among the babies whose mothers took up their employment within three months. In the native white families this excess yielded to a number smaller than the expected number of deaths, when the mothers took up their employment after three months. In the negro families the number of deaths is below the expected number for each period.⁵⁶

From these variations, it may reasonably be inferred that, especially if the mother works away from home, she serves her baby's interests better if she delays her employment at least three months or six months after the baby's birth, and longer if possible.

(3) Did the babies of mothers working away from home have less breast feeding than other babies, and did those whose mothers worked at home have more breast feeding than other babies? Do such variations in methods of feeding account for the high death rates in the one group and the low death rates in the other?

The ways in which working mothers fed their babies were different in the three principal race and nativity groups, just as the methods of nonworking mothers varied in these groups.

In each group, employment away decreased breast feeding and increased both mixed feeding and artificial feeding throughout the first nine months. But in the native white families, after the third month, the increase in artificial feeding was much greater than the increase in mixed feeding; in the foreign white and the colored families, the increase in artificial feeding was not greater than the increase in mixed feeding until after the sixth month. Throughout the nine months, however, the foreign-born white mothers and the negro mothers who went out to work were more likely to give their babies mixed feeding than to wean them entirely; exactly the reverse appeared among the native white mothers.

It has been frequently assumed that few, if any, babies of mothers working away from home had breast milk and no other food. The statements of the mothers interviewed in Baltimore showed that of the 470 babies surviving at the beginning of the sixth month whose

⁵⁵ See Tables 112 and 113, Appendix VII, pp. 314 and 315.

⁵⁶ See Tables 109 and 110, Appendix VII, pp. 310 and 313.

mothers had been employed away during the preceding month, 118, or 25 per cent, were entirely breast fed during the sixth month.⁵⁷

So far as employment either at home or away increases early weaning it will inevitably raise the infant death rate. And the earlier the baby is deprived of breast milk the greater will be the hazard he must face throughout the year.⁵⁸

A comparison of the deaths among babies of mothers employed away during the babies' lifetime with the number expected on the basis of the rates, month by month, for breast-fed, mixed-fed, and artificially-fed babies in the race and nationality and fathers' earnings groups represented, showed an excess of deaths among babies of mothers employed away. The greater prevalence of mixed and artificial feeding leads one to expect a relatively large number of deaths. The actual number was even higher.

TABLE XXVIII.—*Excess mortality among infants of mothers employed away from home during infant's lifetime, when effect of differences in type of feeding, color, and nationality of mothers and earnings of father is eliminated.*

Type of feeding.	Infants of mothers employed away from home during infant's lifetime. ¹	
	Actual deaths.	Expected deaths.
Total.....	68	53.8
Breast.....	6	4.4
Mixed.....	20	13.2
Artificial.....	42	36.2

¹ Excludes 46 infants (6 deaths) of native white mothers in father's earnings groups "No earnings" and "Not reported." See Table 117, Appendix VII, p. 323.

Some excess in the number of deaths among babies of working mothers over the number expected on the basis of the feeding reported appeared in each race and nativity group except in the very small group of foreign families other than Polish. It was highest in the Polish families.

⁵⁷ See Table 116, Appendix VII, p. 317.

⁵⁸ The effect of artificial feeding in relation to the age at which the infant is weaned is discussed in section on Feeding and Infant Mortality, p. 69.

TABLE XXIX.—*Excess mortality, by color and nationality of mother, among infants of mothers employed away from home during infant's lifetime, when effect of differences in color and nationality of mother, earnings of father, type of feeding, and infants' ages is eliminated.*

Color and nationality of mother.	Infants of mothers employed away from home during infant's lifetime. ¹	
	Actual deaths.	Expected deaths. ²
Total.....	66	83
Native white.....	15	23
Polish.....	14	23
Other foreign-born white.....	2	2
Colored.....	37	36

¹ See footnote 1, Table 117, p. 323.

² See footnote 2, Table 117, p. 323.

When the mothers worked at home the effect of their employment upon their way of feeding their babies was much less marked. In the native white families the mothers employed at home had an even higher percentage of babies breast fed at each month of life and a slightly lower percentage artificially fed than the mothers not employed. In the foreign-born white families, the mothers employed at home showed a greater tendency to give their babies either mixed or artificial feeding after the second month than the mothers not employed. In the negro families this tendency appeared from the beginning.

The infant deaths in these families where the mother worked at home were slightly fewer than those expected on the basis of the feeding reported, but the difference occurred chiefly among the babies having breast milk at the time of death. These showed 23 deaths instead of the 36 deaths expected. The numbers of actual deaths and expected deaths among babies artificially fed were practically identical.

TABLE XXX.—*Relative mortality among infants of mothers employed at home during infant's lifetime, when effect of differences in color and nationality of mother, earnings of father, type of feeding, and infants' ages is eliminated.*

Type of feeding.	Infants of mothers employed at home during infant's lifetime. ¹	
	Actual deaths.	Expected deaths.
Total.....	83	96.7
Breast.....	14	20.7
Mixed.....	10	15.9
Artificial.....	59	59.1

¹ See Table 117, Appendix VII, p. 323.

Interference with breast feeding when the mother worked outside her home and continuation of breast feeding when she worked at home seem to account in part for the excessive number of deaths in the one group and the relatively few deaths in the other group. But even after the effect of the different methods of feeding is allowed for, there was still a definite hazard in employment of the mother away from home during her infant's lifetime.

Employment away from home at any time.

In studying the deaths among all babies born to the mothers, not only during 1915 but at any previous time, no data are available about methods of feeding, cause of death, or the baby's age at death. Only the total infant mortality and stillbirth rates for babies of mothers never gainfully employed outside their homes, for babies of mothers so employed before marriage only, and for babies of mothers so employed after marriage can be compared.

The 8,169 babies born to 2,371 mothers never gainfully employed outside their homes showed an infant mortality rate of 99.2 per 1,000.

The 17,491 babies born to 6,229 mothers gainfully employed outside their homes before marriage but not so employed after marriage showed an infant mortality rate of 104.3 per 1,000.

The 9,172 babies born to 2,562 mothers gainfully employed outside their homes after marriage showed an infant mortality rate of 165.8 per 1,000.

In each of these groups, as elsewhere, the infant mortality was higher among negro babies than white babies, the general tendency was for rates to decline as the fathers' earnings increased; and the babies in large families, showed higher rates than others.

From the presence of more negro babies, more babies of fathers with very low earnings, and more babies of mothers who had borne several children in the families where the mothers worked away from home after marriage than in the other families, a high infant mortality among the babies whose mothers worked after marriage was to be expected. But the rate expected from the presence of these unfavorable factors—approximately 143 per 1,000—was considerably below the actual rate of 165.8 per 1,000.⁵⁹

This difference was present in each of the three race and nativity groups considered separately, and it seems to be plainly indicated that the mothers' employment after marriage or some undefined factor related to it was unfavorable to the babies' welfare.

The stillbirth rates were uniformly higher among mothers employed away after marriage than among those employed away before marriage only. But in the native white and the colored families, the mothers who were never gainfully employed away from home had

⁵⁹ See Tables 118, 120, 122, 123, and 124, Appendix VII, pp. 324, 326, 328, 329, and 330.

stillbirth rates higher than the mothers who worked before marriage only, and in the colored families this rose to a point higher than the rate among mothers who worked away after marriage.⁶⁰

It may be noted that in this grouping, no distinction is made between mothers who had worked habitually since marriage and mothers who had worked irregularly or for some one short period since marriage. Mothers who may have worked during each pregnancy are grouped with mothers who may have ceased work before the first pregnancy. The figures may conceal further variations of rates within this general group of working mothers, but they do serve to sum up the general fact that, in actual practice under existing conditions, employment of married women outside their homes involves danger to their babies.⁶¹

TABLE XXXI.—*Stillbirth rates, by employment of mother away from home previous to 1915 birth, by color and nativity of mother.*

Color and nativity of mother.	Stillbirth rate. Mother employed away from home.	
	During pregnancy of 1915 birth.	After marriage but not during pregnancy of 1915 birth.
Native white.....	49.2	21.6
Foreign-born white.....	34.2	28.8
Colored.....	93.8	78.2

Among the live born babies of 1915, there was also in the foreign-born and the colored families a higher mortality from the diseases of early infancy in the group where the mothers worked away from home during pregnancy than in the group where they had worked away after marriage but not during the pregnancy of 1915. In the native white families this difference does not appear, but the rates are approximately equal in the two groups.

It should be noted that in the colored families, but not in the white families, stillbirth and early infancy rates were as high among the few babies whose mothers had never been employed outside the home as among the mothers who worked outside the home during pregnancy. (Detailed tabulations are shown in Table 121, Appendix VII, p. 327.)

From the data for all pregnancies it appears that the age at which the mother had commenced gainful employment away from home

⁶⁰ See Table 119, Appendix VII, p. 326.

⁶¹ Among the births during 1915, the stillbirth rates were uniformly higher in the group where the mothers worked away during pregnancy than in the group where the mothers had worked away after marriage but did not work during the pregnancy of 1915.

affected the well-being of her children. Among all mothers employed away at any time previous to the birth occurring during 1915, the lowest infant mortality rate, 106.9 per 1,000, was when the mother had been from 16 to 19 years of age at beginning work. The highest rate, 161.7 per 1,000, appeared in the group of 699 babies whose mothers had begun work after the twenty-fifth year, and the next highest rate, 139.6 per 1,000, in the group of 8,983 babies whose mothers had begun work before they were 14.

But each of these two groups with rates above the average for all babies of mothers employed away were so constituted as to lead to an unfavorable infant mortality rate apart from the mothers' age at first employment. In the "25 years and over" group 91 per cent of the babies were born to mothers employed away from home after marriage—a percentage more than twice as large as that in any earlier age group. In the "under 14 years" group an economic level below the average for all working mothers may be assumed, and this group is known to include a relatively high percentage of negro babies (20 per cent, as against an average of 14 per cent in other age groups).

The only check afforded by the tabulations on the variations in economic level in the families where the mothers had begun work at the various ages is the fact of the mothers' employment or nonemployment away from home after marriage. But on the basis of the mothers' employment and of color and nativity, "expected rates" may fairly be computed for comparison with the actual rates in the several age groups. From these it appears that the relatively low rate among babies whose mothers had begun work at from 16 to 19 years of age was lower than the expected rate for this age group, and the relatively high rate among babies whose mothers had begun work under 14 years was higher than the expected rate.

In the other data, based on births during 1915, there was a similar trend in the rates—the lowest among babies whose mothers had begun work between 16 and 19 years, and the highest among babies whose mothers had begun work at 25 or over, with a rate also slightly above the average for all mothers who had ever been employed away from home in the "under 14 years" group. But comparing these actual rates with rates expected from the distribution in the several groups of mothers employed and mothers not employed during the pregnancy of 1915, and of native white, foreign-born white, and colored mothers, the variation in the several age groups are so little greater than the expected variation that with the relatively small numbers involved it can not fairly be related to the mother's age at beginning work. Even when the total mortality is divided into the two big groups of causes, there is no clear indication of a

relation between excess mortality from either group of causes and the mother's age at beginning work.⁶²

Summary.

The babies of women who had been employed outside their homes since their marriage faced a greater hazard than other babies, and this hazard appears to have been especially emphasized when the mothers had been employed away during pregnancy or during the first 12 months after the baby's birth.

That employment outside the home during pregnancy had reacted harmfully upon the condition of the mother and through her upon the health of her baby is indicated by a high percentage of premature births to mothers employed away from home during pregnancy, high stillbirth rates to native white and colored mothers so employed, and high mortality from early infancy causes even among the full-term live births of mothers employed away from home during pregnancy. The babies of mothers who worked away during pregnancy also showed a high mortality from causes other than those peculiar to early infancy. This may have been due in part to the mother's resumption of work during the first year of the baby's lifetime.

The variations in stillbirth rates and the mortality from early infancy in relation to the interval of rest before confinement indicate the importance of the mother's ceasing her employment outside the home at least two weeks before her confinement.

Employment away from home during the baby's first year increased the hazard to the baby. This increase in the hazard was especially marked when the mother took up her work before the baby was 6 months old. The mothers employed away from home resorted largely to artificial feeding for their babies, but the greater prevalence of artificial feeding accounts only in part for the special hazard. The actual number of deaths was greater than the number that would have occurred among them if these babies had faced the average hazards to all babies of their nationalities and their economic status who had the same high percentage of artificial feeding.

In general, then, the baby whose mother works away from home during pregnancy or during the baby's first year pays dearly for the physical strain to the mother and for the lack of a mother's care.

The mothers' employment at home, on the other hand, in the occupations and under the conditions prevailing in the families studied seems to have no ill effect upon the mothers or their babies. The one rate indicating an exception to this general statement was a stillbirth rate among colored mothers employed at home during

⁶² See Tables 123, 124, 125, and 126, Appendix VII, pp. 329-331.

pregnancy greatly in excess of the stillbirth rate among colored mothers not employed during pregnancy.

RELATION OF INFANT MORTALITY TO THE MOTHER'S ILLITERACY OR INABILITY TO SPEAK ENGLISH.

The babies of illiterate mothers and the babies of mothers who spoke no English had a higher mortality than others, but outside the small group of native white families in which the mother was illiterate the data collected offer no evidence that the differences in mortality were directly related to the fact of illiteracy or the fact that a foreign-born mother had not learned to speak English.⁶³

It has already been noted⁶⁴ that the illiterate mothers and the mothers who spoke no English represented, on the whole, families poorer than the average in their several color and nationality groups; and, when due allowance is made in the comparison of rates for the low economic level in these families, it is found that except among the illiterate native white mothers the excess in mortality which seemed to be related to illiteracy or to inability to speak English practically disappears. And among the Polish babies there was, on either basis, a somewhat higher mortality in the families where the mother spoke English and in the families where the mother could read and write than in other Polish families.⁶⁵

Although the higher mortality in certain foreign families where the mother spoke no English coincides with greater poverty and seems to be traceable to it, another question at once arises: Was not lack of English a barrier cutting off certain mothers from the benefit of infant-welfare work? In one sense it might seem so, for, it will be remembered, fewer of the Polish and Italian women than of the Jewish women had learned to speak English and fewer in these two groups than in the Jewish group had care from the infant-welfare agencies. But the lack of English does not account for the lack of care. Within the Polish group 7 per cent of the 210 infants of mothers who spoke English and 5 per cent of the 388 of mothers who did not speak English had regular supervision from an infant-welfare agency. Within the Jewish group, 23 per cent of the 768 infants of mothers who spoke English had such supervision, and 31 per cent of the 169 of mothers who did not speak English. Only in the Italian group was the percentage having such regular supervision markedly higher

⁶³ See Tables 127, 128, 129, and 130, Appendix VII, pp. 332-334.

⁶⁴ See p. 32.

⁶⁵ The differences in the prevalence of artificial feeding or of mixed feeding previously noted in connection with the illiteracy and inability to speak English (see p. 54) were too slight materially to affect the relative mortality, and can not account for the high mortality among babies of illiterate native white mothers or the relatively low mortality among babies of Polish mothers who were illiterate or who could not speak English.

among the infants of mothers who spoke English (22 per cent) than among those of mothers who did not speak English (9 per cent).⁶⁸

The chief measureable difference, then, between the families where the foreign-born mother had not learned English, or the mother, whether native or foreign, had not learned to read and write, and all other families, is a difference in economic status, and this is, as has been seen, a real factor in infant mortality. So far as illiteracy on the part of the parents or their inability to speak English is responsible for the greater poverty of the families in which the parents have these limitations, the limitations become, themselves, a factor in the infant mortality rate.

⁶⁸ See Table 131, Appendix VII, p. 334.

PHYSICAL FACTORS IN INFANT MORTALITY.

ORDER OF BIRTH, AGE OF MOTHER, AND INTERVAL BETWEEN BIRTHS

It is commonly said that mortality among first-born children is higher than among second- or third-born, but lower than among the later-born children. And babies born to mothers more than 35 years old are supposed to face a special hazard. References to the high mortality among fourth-, fifth-, and later-born children are frequently countered by the statement that the largest families are the poorest and that poverty rather than any essential condition in the bearing and rearing of many children is the cause of the excessive hazard.

On these points one set of data is available based on the births during 1915, and a second set of data based on these and all previous births to the same mothers.

Order of birth.

The data based on births during 1915 showed a rate for the 2,868 first-born children slightly higher than the rates for second- and third-born children, and the rates rose steadily with each order of birth after the third.⁶⁷ The curve in the rates rose most sharply among the later births in large families, and an excess in rates in the group of babies seventh to ninth in order of birth as compared with babies of earlier orders of birth persisted in the subdivisions of both groups when the white and colored mothers and the families at different economic levels are considered separately.⁶⁸

In the larger group the first-born babies showed an infant mortality rate higher than the rate for babies second in order of birth and approximately equal to the rate for babies third in order of birth. For later births the rate rose steadily and touched its highest point among the 883 babies tenth or later in order of birth.⁶⁹

In the larger numbers considered, the births in this group of all pregnancies would presumably give a better basis for discussion of order of birth than the births in 1915, but there are certain qualifications which should be noted. For example, if this large group—all births—is subdivided according to the total numbers of births reported by the mothers, it appears that within each subdivision of the group the first-born babies showed a higher mortality than the later-born babies in the same families.⁶⁹ Even in the families of seven

⁶⁷ See Tables 132 and 133, Appendix VII, p. 335.

⁶⁸ See Tables 137, 138, and 139, Appendix VII, pp. 338-339.

⁶⁹ See Table 135, Appendix VII, p. 337.

or more births the first-born babies had higher infant mortality rates than the babies born seventh or later in the same families. This apparent contradiction of the relative rates shown among the births during 1915 should be weighed against the fact that these births of all pregnancies had extended over a number of years during which the development of work for infant welfare and the improvement of sanitary conditions had been tending steadily to reduce mortality. The importance of this latter qualification is further suggested by the differences between the rates for babies of corresponding orders of birth in the small families and in the large families, and again by the differences in mortality among all babies in small families and all babies in large families, differences which fall far beyond the variation expected from the relatively unfavorable economic conditions in the larger families.⁷⁰

In both sets of data we have stillbirth rates in addition to the infant mortality rates for the several orders of birth. The stillbirth rates for the several orders of birth showed almost identical curves in the two sets of data, with a greater loss among first births than among any later births except those tenth or over in order of birth. The rates dropped sharply from the first birth to the second and thereafter rose slowly without a break in the upward curve.⁷¹

In the data based on births during 1915, but not in the other set of data, are found analyses of the infant mortality rates by causes peculiar to early infancy and all other causes, and statements of the relative prevalence of premature births among the several orders of birth. The first child was more likely than later children to come to birth prematurely. Of the 2,999 first births in 1915, 9 per cent were premature; of the 8,196 later births, 5.9 per cent were premature. Or, considering only the live-born babies, 8 per cent were premature among the first births and 4.6 per cent were premature among the later births. The percentage of prematurity was lowest among the births fourth to seventh in order of birth and rose thereafter, but only among the babies twelfth and later in order of birth was it higher than among the first born.⁷²

⁷⁰ That is, assuming that earnings during the year after the birth in 1915 were a fair index to the family's economic status throughout married life. It may be questioned whether the fathers who in 1915 were employed in manual labor, either skilled or unskilled, would have had during their married life any general improvement in rate of wages (in relation to the cost of living) comparable to the salary increases that commonly occur among those doing administrative or professional work. The majority of the fathers were wage earners doing manual labor.

⁷¹ See Tables 132, 133, 134, and 142, Appendix VII, pp. 335, 336, and 340.

⁷² See Table 140, Appendix VII, p. 340.

TABLE XVIII.—Infant mortality rates from early infancy and from all other causes, by order of birth; single births in 1915.

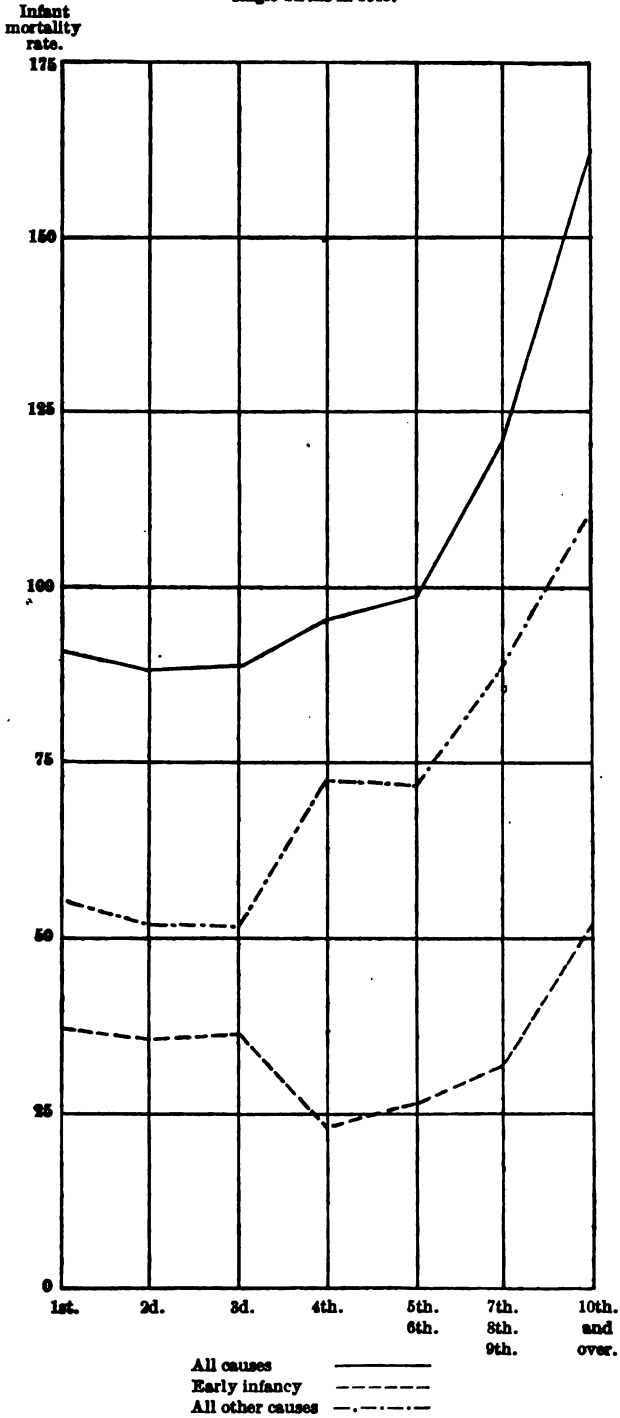


TABLE I.—*Infant mortality and stillbirth rates, by order of birth and term; births in 1915.*

Order of birth and term.	Births.	Stillbirth rates (per 100 births). ¹	Infant mortality rate (per 1,000 live births). ¹
Total:			
First.....	2,999	4.4	94.3
Second.....	2,471	2.5	82.6
Third.....	1,525	2.9	81.8
Fourth and later.....	4,200	3.8	120.3
Full term:			
First.....	2,726	3.3	65.6
Second.....	2,312	1.4	62.7
Third.....	1,429	1.3	65.5
Fourth and later.....	3,963	2.3	97.9
Premature:			
First.....	271	15.1	128.1
Second.....	158	19.0	125.0
Third.....	94		
Fourth and later.....	232	29.3	140.3
Not reported.....	10		

¹ Not shown where base is less than 100.

Since the mortality among premature births is exceptionally heavy, as will be shown later, the high proportion of premature among first births tends to raise the mortality rate among first as compared with later births. Considering only the full-term births, all the rates for the several orders of birth fall very considerably below those when the full-term and the premature births are grouped together, the difference being greatest for the first births. The rate for the first births is still above that for second, but falls below the rate for third births, in contrast to its position when the births of all terms are grouped. It should be noted further that among the premature births the rate among first births was lowest of all; likewise among this group the first births had the lowest stillbirth rate.

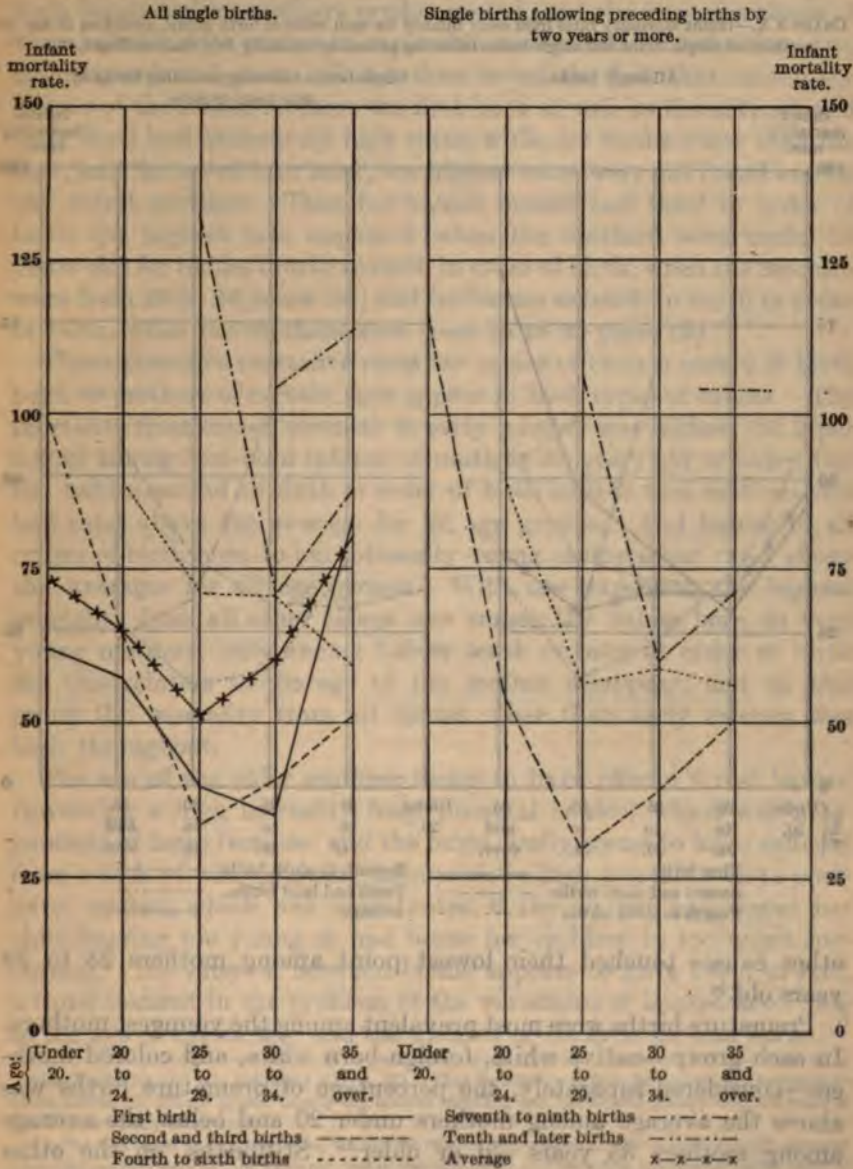
Reverting to the consideration of the entire group and analyzing the total infant mortality rates according to the cause of death, and considering separately the rate from causes peculiar to early infancy—which are most closely related to the care and condition of the mother—and the rate of deaths from all other causes, it is found that for each type of causes the rates were slightly higher for first-born babies than for babies second or third in order of birth, while the steady increase in total rate among babies fourth and later in order of birth was due to a marked increase in the rate from causes other than those peculiar to early infancy. For, although the rate from causes peculiar to early infancy touched its highest point among babies tenth or later in order of birth, the variation was slight, and for the intermediate orders of birth—the fourth to the ninth—the rate from early infancy was somewhat lower than the corresponding rate for babies first to third in order of birth.⁷³

⁷³ See Table 142, Appendix VII, p. 340.

Age of mother.

Closely related to the variations in mortality for the several orders of birth were the variations for the several age periods of the mothers.

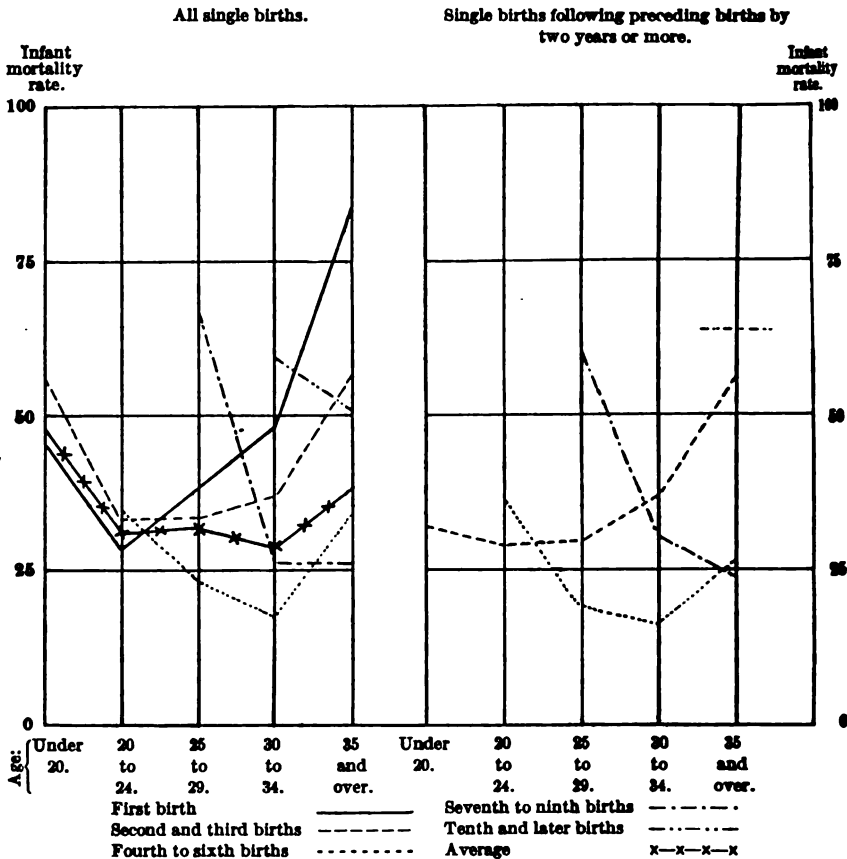
CHART XIX.—Infant mortality rates from all causes for each order of birth group, according to age of mother; all single births and single births following preceding births by two years or longer, 1915.



Both among the 1915 births and the larger group of all births to these mothers the same curve in the rates was found, touching the lowest point among mothers from 25 to 29 years of age and rising to high

points among mothers under 20 and 35 or over. The same general curve appeared in the rates from early infancy and in the rates from all other causes when these were considered separately, with this difference—that the rates from early infancy were practically identical for the three age periods between 20 and 35, but the rates from all

CHART XX.—Infant mortality rates from early infancy for each order of birth group, according to age of mother; all single births and single births following preceding births by two years or longer, 1914.



other causes touched their lowest point among mothers 25 to 29 years old.⁷⁴

Premature births were most prevalent among the youngest mothers. In each group—native white, foreign-born white, and colored mothers—considered separately, the percentage of premature births was above the average among mothers under 20 and below the average among mothers 35 years old or older.⁷⁵ Stillbirths, on the other

⁷⁴ See Tables 143, 146, and 147, Appendix VII, pp. 341 and 342.

⁷⁵ See Table 148, Appendix VII, p. 344.

hand, were most prevalent among the oldest mothers, although the stillbirth rate among mothers under 20 was also above the average.⁷⁶

One might assume that the mortality rates for older mothers were high because among their babies the later births in large families predominated, or that the rate for later births in large families was high because older mothers predominated, and the limited volume of the available data makes it impossible to separate entirely these two interdependent factors. But it does reveal the fact that among the babies of the oldest mothers the first born as well as the seventh and later born had excessively high rates, while for births other than the first, and the seventh or later, the highest rates were not found among the oldest mothers. Thus for babies second and third in order of birth the highest rate appeared when the mothers were under 20 years old; for babies fourth to sixth in order of birth, when the mothers were from 20 to 24 years old; and for babies seventh to ninth in order of birth, when the mothers were from 25 to 29 years old.⁷⁷

These excessive mortality rates for babies of certain orders of birth born to mothers of certain ages appear in both types of causes. The mortality from causes peculiar to early infancy was highest (83.3 per 1,000) among first-born infants of mothers 35 years old or older, but the babies second to sixth in order of birth born to such mothers also had rates above the average for all age groups. And babies of all orders of birth born to exceptionally young mothers had rates above the averages for all age groups. With one exception the highest mortality from all other causes was among the babies born to very young mothers; only among babies tenth or later in order of birth did this relation to the age of the mother disappear, and in this group the mortality from all causes other than early infancy was high throughout.

The age of the older mothers seems to have offered a real hazard (involving a high mortality from prenatal causes) which was independent of large families; and the large family seems to have suffered from a lack of care (showing an especially high mortality from post-natal causes) which was accentuated if the mother had begun her child-bearing too young or had borne her children in too quick succession. The interval between births appears to have been, in fact, a third element in the problem of the variations of hazard according to the age of the mother and the number of children she had borne.

⁷⁶ See Tables 144 and 145, Appendix VII, p. 341. This variation was true for native and foreign-born white mothers; it did not appear among the colored mothers, but the colored groups were too small to afford basis for any deductions.

⁷⁷ In the data based on all pregnancies, the highest rate for babies tenth or later in order of birth appeared when the mothers were 30 to 34 years old; but in the data based on 1915 births, the rate for babies tenth or later in order of birth is identical at this age period and among older mothers. See Tables 150, 151, 152, and 153, Appendix VII, pp. 345-347.

Interval between births.

In general the babies who followed a preceding birth by an interval of less than two years had a definitely higher mortality than those for whom the interval was longer, with a rate of 146.7 per 1,000 among the 2,072 babies born after an interval of less than 2 years since a preceding birth and a rate of 92.3 per 1,000 among the 5,810 babies born after an interval of 2 years or longer. (Compare the rate of 94.8 among the 2,868 first-born babies.) It is, of course, true that among these short-interval babies the percentage of negro families and, in the white group, the percentage of poor families were somewhat higher than among the babies following a preceding birth by two years or longer. But these differences were too slight to account for the difference in rates.⁷⁸

Moreover, if the native white families in the several earnings groups are considered separately, and the variations due to race or nationality and to economic status are thus eliminated, there appears in each earnings group except the highest a markedly higher infant mortality among the short-interval babies than among the others.

The tabulations permit a comparison of infant mortality rates by interval from another angle—that is, in relation to the mother's pregnancy within 12 months after the birth of the baby in 1915.

TABLE II.—*Infant deaths in relation to succeeding pregnancies commencing within 1 year after birth of 1915 infant; live births in 1915.*

Relation of infant death to pregnancy of mother.	Live births.		
	Total.	Mother pregnant within 1 year after birth.	
		Num-ber.	Per-cent.
Total live births.....	10,797	1,563	14.5
Infant deaths.....	1,117	406	36.3
Preceding month in which pregnancy began.....		299	26.8
Following month in which pregnancy began.....		74	6.6
During month in which pregnancy began.....		28	2.5
Relation to pregnancy not reported.....		5	.4

The percentage of mothers pregnant within 12 months after the birth in 1915 was more than twice as high among the babies who died within the year as in the entire group; and among those babies who died and whose mothers became pregnant within the year, approximately three-fourths died before and one-fourth after the pregnancy had begun.⁷⁹

⁷⁸ See Tables 154, 155, and 156, Appendix VII, pp. 348-351.

⁷⁹ See Tables 161 and 162, Appendix VII, pp. 355 and 356.

Of the 1,231 babies whose mothers became pregnant during their first year of lifetime, 74 babies died within 10 months after birth, whereas only 34 babies would have died if they had been facing the average hazards of all who were born in 1915. Most of them were deprived of mother's milk; but the deaths were also in excess of the deaths which might have been expected because of the greater prevalence of artificial feeding.

TABLE III.—*Excess mortality among infants of mothers becoming pregnant during first year of infant's lifetime, when effect of differences in type of feeding and infants' ages is eliminated.*

Type of feeding.	Infants of mothers becoming pregnant during first year of infant's lifetime.		
	Actual deaths. ¹	Expected deaths.	
		On basis of average mortality.	On basis of feeding reported.
Total.....	74	33.8	60.3
Breast.....	2	.....	1.2
Mixed.....	5	.....	2.8
Artificial.....	67	.....	56.3

¹ See Table 163, Appendix VII, p. 357.

The births of all pregnancies can be classified only according to the total number of births to the same mother and the number of years she had been married.⁸⁰ They indicate the same general tendency—the shorter the average interval between births the higher the mortality.

It is possible, however, that the high infant mortality accompanying the births in families with short average intervals between births was in part a cause, as well as a result, of the short interval and the circumstances under which it occurred. For it appears that the mother whose baby had died was more likely to become pregnant within a short period than the mother whose baby was living, and hence in classifying the births for mothers who had had short intervals between births, the fact that the death of the infant was correlated with short interval following the death exaggerated the relation between infant mortality and short interval.

⁸⁰ See Tables 157 and 158, Appendix VII, pp. 352 and 353.

TABLE IV.—Per cent of short intervals following birth¹ preceding 1915 birth according to survival or death of preceding birth; ² single births in 1915 second and later in order of birth.³

Type of loss.	Single births in 1915.		
	Total. ³	With interval under two years since preceding birth. ¹	
		Number.	Per cent.
Single births ² of 1915.....	7,959	2,101	26.4
Preceding birth a loss.....	1,650	776	47.0
Stillbirth or miscarriage.....	597	440	73.7
Infant death.....	753	336	44.6
Under 3 months.....	365	184	50.4
3 months, under 6.....	157	66	42.0
6 months, under 12.....	225	85	37.8
Age not reported.....	6	1	16.7
1915 birth a loss.....	1,016	354	34.8
Stillbirth.....	252	75	29.8
Infant death.....	764	279	36.5

¹ Includes miscarriages.

² Excludes first births.

³ The corresponding percentage for all births in 1915, 26.2; for all live births, 26.1; for single live births 26.3.

It has been noted that among the mothers who became pregnant within the year after the birth in 1915 and whose babies died within the year three-fourths became pregnant after the death of the baby and not before. From the data about births in 1915 and the preceding birth it appears that the percentage of short intervals was considerably higher in the groups where the preceding birth was a stillbirth or miscarriage or a live-born baby who died within 12 months than in the group as a whole. Some such difference would appear if short interval was a cause of infant mortality. But the actual percentage of short intervals in the group where the preceding birth did not survive (47 per cent) was not only higher than in the group as a whole (26 per cent) but also higher than in the group of losses among the 1915 births (35 per cent). And, significantly, the difference was greatest where the preceding birth had been a stillbirth or miscarriage or a death occurring within three months after birth. This seems to indicate that the short interval was in part a result of the death of the preceding infant. It does not, however, do away with all the excess mortality, for among the babies who died in 1915 the percentage who had followed the preceding birth by an interval of less than two years was still considerably higher than the corresponding percentage among all babies born in 1915—or, as has been noted, 35 per cent instead of 26 per cent.

Evidently, the mothers whose babies had died were a little more likely than other mothers to bear another child after a short interval; the babies whose mothers became pregnant during the first year of

the babies' lifetime met a special hazard; and, except in the most prosperous families, the babies who followed a preceding birth by an interval of less than two years had a higher infant mortality than other babies.

It is generally assumed that short intervals between births are more prevalent in large families than in small families, and this seems to have been true for the few exceptional families where the mother had borne 15 or more children. In these families, more than half the births during 1915 followed the preceding birth by an interval of less than two years. But in the much larger number of families where the mother had borne from 10 to 14 children, the percentage reporting intervals of less than two years was less than in the families where the mother had borne only 2 children and only a trifle higher than in the families where the mother had borne 3 children. A similar tendency appears among the births of all pregnancies. The interval in this group of data refers not to the period between births but the period between one birth and the beginning of the following pregnancy. The percentage with average interval under two years is therefore higher, on this basis, throughout. But the relation of the several orders of birth to short interval is identical with that shown in the births during 1915 and the interval since the preceding birth.⁸¹

It is not surprising, therefore, to find also that the percentage of births during 1915 following the preceding birth by an interval of less than two years was greatest among the youngest mothers and decreased steadily as the age of the mothers increased. At all age periods there was a practically constant proportion reporting an interval of two or three years; only the percentage reporting an interval of four years or more increased among the older mothers as the percentage of very short intervals declined.⁸²

The excess mortality among babies born in 1915 who followed a preceding birth by an interval of less than two years appeared especially in deaths from causes other than early infancy. For example, the babies following a previous birth by two years or longer had a mortality from these "other causes" which increased with the later orders of birth, but for each order of birth the short interval babies showed a higher rate from "other causes" than the rates in the other group. For the causes peculiar to early infancy, on the other hand, the short interval babies earlier than seventh in order of birth had rates definitely higher than the babies who followed a previous birth by two or three years; and the babies seventh or later in order of birth showed no differences in rates according to interval.⁸³ It would seem, therefore, that short intervals between births affect

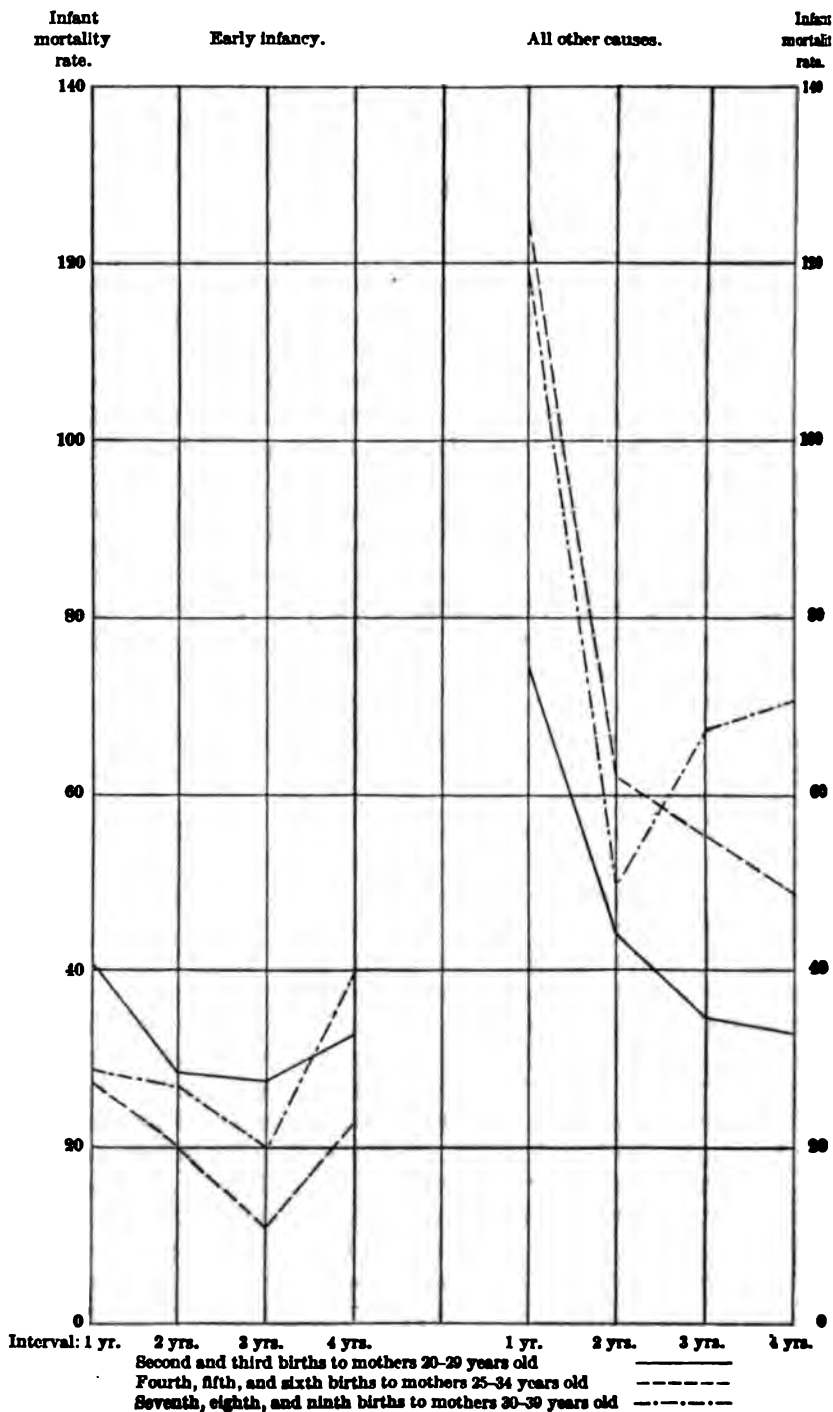
⁸¹ See Table 165, Appendix VII, p. 357.

⁸² See Table 166, Appendix VII, p. 358.

⁸³ See Table 167, Appendix VII, p. 358.

INFANT MORTALITY, BALTIMORE, MD.

CHART XXI.—Infant mortality rates from early infancy and from all causes for each order of birth group by interval since preceding birth; single births in 1915.



the care the mother is able to give the baby more than they affect the physical condition of the mother herself.

Again, at each age period of the mother, except among mothers less than 20 years old, there was a relatively high mortality from "other causes" among the short interval babies but no clear difference by interval in the mortality from early infancy. Under 20, however, the mortality from early infancy rose markedly among the short interval babies, while for all babies alike the mortality from "other causes" was high.⁸⁴

Variations in mortality according to the age of the mother and the order of the baby's birth can not, therefore, except in this group of babies born to mothers less than 20 years old, be ascribed to the prevalence in certain groups of short intervals between births. In fact, when all the babies who followed the preceding birth by an interval of less than two years are eliminated, the characteristic curves in the rates persist, except that the rise in the curve for causes peculiar to early infancy among babies of mothers under 20 years of age disappears. But while the curves have the same general outlines they are at several points lower when the short interval babies have been eliminated than they are for the entire group, and most notably so in the rates for causes other than early infancy among babies fourth to ninth in order of birth born to mothers 25 years old or older.^{84a}

TABLE V.—*Infant mortality rate,¹ by interval since preceding birth,² order of birth,² and age of mother; live births in 1915.*

Age of mother and order of birth. ³	Infant mortality rate. ¹	
	Interval under 2 years.	Interval 2 years and over.
Second and third births:		
Under 20 years.....	160.6	.....
20-34 years.....	113.0	70.4
35 years and over.....	.....	107.3
Fourth to sixth births:		
20-34 years.....	142.3	81.2
35 years and over.....	.....	82.9
Seventh and later births:		
20-34 years.....	166.7	110.4
35 years and over.....	185.0	122.6

¹ Not shown where base is less than 100.

² Includes miscarriages.

Summary.

It may fairly be concluded that although these three factors are closely bound together, yet each makes its own contribution to the general problem. In grouping the births according to the order of birth, it is found that, independently of age and interval, the births

⁸⁴ See Table 168, Appendix VII, p. 359.

^{84a} See Table 169, Appendix VII, p. 360.

seventh and later in order had a mortality higher than earlier births. The babies of mothers under 20 or over 35 years of age in general faced a greater hazard than other babies, although to this general rule there were certain exceptions. And the short-interval babies had throughout higher rates than other babies of the same orders of birth born to mothers of the same age periods.

Variations in rate with the different age periods of the mother appeared in the deaths from early infancy and also in the deaths from all other causes. But variations with the different orders of birth and the different intervals between births appeared more markedly in the mortality from other causes than in the mortality from early infancy.

Large families and short intervals were especially a problem in the poorer homes, where they were somewhat more prevalent than in prosperous homes. In the small group of prosperous homes the excess mortality that accompanied them elsewhere was greatly diminished or seemed to disappear entirely.

PLURAL BIRTHS.

Plural births show an infant mortality from two to four times as high as the infant mortality among single births, but the number of plural births is small and they are not, therefore, an important factor in the total mortality of a community. For example, if no plural births had occurred in the Baltimore group of births during 1915 the infant mortality rate would have been 97.1 per 1,000 instead of 103.5 per 1,000.^{84b}

Just over 1 per cent of the pregnancies studied resulted in plural births. Of all the births during 1915, 2.5 per cent were plural. But the losses among plural births were so great that, among the infants born in 1915 and surviving their first year of life, the number of twins or triplets was 1.7 per cent of the total survivors.

The three color and nativity groups showed practically no variation in the percentage of plural births. But there was a slight variation according to the age of the mother and the number of children she had borne. The younger mothers showed fewer plural births than the older mothers, the percentage of plural births increasing steadily from approximately 1 per cent among the mothers under 20 years of age to approximately 4 per cent among the mothers 35 years of age or over. A similar increase appears when the first, second, third, and later births are compared. Analysis of the births during 1915 seems to indicate that order of birth and age of mother are independent factors in the prevalence of plural births.⁸⁵

^{84b} See Tables 170, 171, 172, and 173, Appendix VII, pp. 361-362.

⁸⁵ See Tables 174, 175, 176, and 177, Appendix VII, pp. 362-363.

It is clear, also, that the mother who has once had a plural birth is more likely than other mothers to have plural births. Of the 38,211 pregnancies studied, 1.1 per cent resulted in plural births; of the 734 pregnancies subsequent to a plural birth, 3.7 per cent resulted in plural births. This simply indicates that the second occurrence of a plural birth is correlated with the occurrence of a first plural birth.

TABLE VI.—Loss rates—Comparison of single and plural births¹ in 1915.

Type of loss.	Loss rates.	
	Single births.	Plural births.
Miscarriages (per 100 births) ¹	3.6	5.4
Stillbirths (per 100 births).....	3.6	7.1
Infant mortality (per 1,000 live births).....	97.1	361.5
Early infancy.....	33.9	192.3
All other causes.....	63.2	169.2

¹ Includes miscarriages.

In every sense the losses were high among plural births. Miscarriages, stillbirths, and infant deaths were all more numerous among plural than among single births. The infant mortality among plural births showed its greatest excess in deaths from early infancy, but it was also high from all other causes combined. There was among the plural births a high percentage of premature births, but it was also found that among the full-term plural births the mortality rate (266 per 1,000) was more than three times the mortality rate (73.9 per 1,000) among the full-term single births.⁸⁶

TABLE VII.—Computed annual infant mortality rates, by type of feeding; comparison of plural and all live births in 1915.

Type of feeding.	Computed infant mortality rate.	
	All births.	Plural births.
Not fed; died at once.....	24.1	88.5
Breast fed.....	43.3	132.2
Mixed fed.....	87.4	256.2
Artificially fed.....	191.4	399.0

Among the plural births,⁸⁷ the percentage of infants artificially fed was high at each month from the first to the tenth; but, again, for each type of feeding considered separately, the computed rate per 1,000 infants fed was markedly higher among the plural-born than among the single-born children.

⁸⁶ See Tables 178 and 179, Appendix VII, pp. 363 and 364.

⁸⁷ See Table 180, Appendix VII, p. 364.

Interval between births.

In general the babies who followed a preceding birth by an interval of less than two years had a definitely higher mortality than those for whom the interval was longer, with a rate of 146.7 per 1,000 among the 2,072 babies born after an interval of less than 2 years since a preceding birth and a rate of 92.3 per 1,000 among the 5,810 babies born after an interval of 2 years or longer. (Compare the rate of 94.8 among the 2,868 first-born babies.) It is, of course, true that among these short-interval babies the percentage of negro families and, in the white group, the percentage of poor families were somewhat higher than among the babies following a preceding birth by two years or longer. But these differences were too slight to account for the difference in rates.⁷⁸

Moreover, if the native white families in the several earnings groups are considered separately, and the variations due to race or nationality and to economic status are thus eliminated, there appears in each earnings group except the highest a markedly higher infant mortality among the short-interval babies than among the others.

The tabulations permit a comparison of infant mortality rates by interval from another angle—that is, in relation to the mother's pregnancy within 12 months after the birth of the baby in 1915.

TABLE II.—*Infant deaths in relation to succeeding pregnancies commencing within 1 year after birth of 1915 infant; live births in 1915.*

Relation of infant death to pregnancy of mother.	Live births.		
	Total.	Mother pregnant within 1 year after birth.	
		Number.	Per cent.
Total live births.....	10,797	1,563	14.5
Infant deaths.....	1,117	406	36.3
Preceding month in which pregnancy began.....		299	26.8
Following month in which pregnancy began.....		74	6.6
During month in which pregnancy began.....		26	2.3
Relation to pregnancy not reported.....		5	.4

The percentage of mothers pregnant within 12 months after the birth in 1915 was more than twice as high among the babies who died within the year as in the entire group; and among those babies who died and whose mothers became pregnant within the year, approximately three-fourths died before and one-fourth after the pregnancy had begun.⁷⁹

⁷⁸ See Tables 154, 155, and 156, Appendix VII, pp. 348-351.

⁷⁹ See Tables 161 and 162, Appendix VII, pp. 355 and 356.

Of the 1,231 babies whose mothers became pregnant during their first year of lifetime, 74 babies died within 10 months after birth, whereas only 34 babies would have died if they had been facing the average hazards of all who were born in 1915. Most of them were deprived of mother's milk; but the deaths were also in excess of the deaths which might have been expected because of the greater prevalence of artificial feeding.

TABLE III.—*Excess mortality among infants of mothers becoming pregnant during first year of infant's lifetime, when effect of differences in type of feeding and infants' ages is eliminated.*

Type of feeding.	Infants of mothers becoming pregnant during first year of infant's lifetime.		
	Actual deaths. ¹	Expected deaths.	
		On basis of average mortality.	On basis of feeding reported.
Total.....	74	33.8	60.3
Breast.....	2	.....	1.2
Mixed.....	5	.....	2.8
Artificial.....	67	.....	56.3

¹ See Table 163, Appendix VII, p. 357.

The births of all pregnancies can be classified only according to the total number of births to the same mother and the number of years she had been married.⁸⁰ They indicate the same general tendency—the shorter the average interval between births the higher the mortality.

It is possible, however, that the high infant mortality accompanying the births in families with short average intervals between births was in part a cause, as well as a result, of the short interval and the circumstances under which it occurred. For it appears that the mother whose baby had died was more likely to become pregnant within a short period than the mother whose baby was living, and hence in classifying the births for mothers who had had short intervals between births, the fact that the death of the infant was correlated with short interval following the death exaggerated the relation between infant mortality and short interval.

⁸⁰ See Tables 157 and 158, Appendix VII, pp. 352 and 353.

TABLE IV.—Per cent of short intervals following birth¹ preceding 1915 birth according to survival or death of preceding birth;² single births in 1915 second and later in order of birth.³

Type of loss.	Single births in 1915.		
	Total. ³	With interval under two years since preceding birth. ¹	
		Number.	Per cent.
Single births ² of 1915.....	7,959	2,101	26.4
Preceding birth a loss.....	1,650	776	47.0
Stillbirth or miscarriage.....	897	440	49.1
Infant death.....	753	336	44.6
Under 3 months.....	365	184	50.4
3 months, under 6.....	157	66	42.0
6 months, under 12.....	225	85	37.8
Age not reported.....	6	1	.....
1915 birth a loss.....	1,016	354	34.8
Stillbirth.....	252	75	29.8
Infant death.....	764	279	36.5

¹ Includes miscarriages.

² Excludes first births.

³ The corresponding percentage for all births in 1915, 26.2; for all live births, 26.1; for single live births 26.3.

It has been noted that among the mothers who became pregnant within the year after the birth in 1915 and whose babies died within the year three-fourths became pregnant after the death of the baby and not before. From the data about births in 1915 and the preceding birth it appears that the percentage of short intervals was considerably higher in the groups where the preceding birth was a stillbirth or miscarriage or a live-born baby who died within 12 months than in the group as a whole. Some such difference would appear if short interval was a cause of infant mortality. But the actual percentage of short intervals in the group where the preceding birth did not survive (47 per cent) was not only higher than in the group as a whole (26 per cent) but also higher than in the group of losses among the 1915 births (35 per cent). And, significantly, the difference was greatest where the preceding birth had been a stillbirth or miscarriage or a death occurring within three months after birth. This seems to indicate that the short interval was in part a result of the death of the preceding infant. It does not, however, do away with all the excess mortality, for among the babies who died in 1915 the percentage who had followed the preceding birth by an interval of less than two years was still considerably higher than the corresponding percentage among all babies born in 1915—or, as has been noted, 35 per cent instead of 26 per cent.

Evidently, the mothers whose babies had died were a little more likely than other mothers to bear another child after a short interval; the babies whose mothers became pregnant during the first year of

the babies' lifetime met a special hazard; and, except in the most prosperous families, the babies who followed a preceding birth by an interval of less than two years had a higher infant mortality than other babies.

It is generally assumed that short intervals between births are more prevalent in large families than in small families, and this seems to have been true for the few exceptional families where the mother had borne 15 or more children. In these families, more than half the births during 1915 followed the preceding birth by an interval of less than two years. But in the much larger number of families where the mother had borne from 10 to 14 children, the percentage reporting intervals of less than two years was less than in the families where the mother had borne only 2 children and only a trifle higher than in the families where the mother had borne 3 children. A similar tendency appears among the births of all pregnancies. The interval in this group of data refers not to the period between births but the period between one birth and the beginning of the following pregnancy. The percentage with average interval under two years is therefore higher, on this basis, throughout. But the relation of the several orders of birth to short interval is identical with that shown in the births during 1915 and the interval since the preceding birth.⁸¹

It is not surprising, therefore, to find also that the percentage of births during 1915 following the preceding birth by an interval of less than two years was greatest among the youngest mothers and decreased steadily as the age of the mothers increased. At all age periods there was a practically constant proportion reporting an interval of two or three years; only the percentage reporting an interval of four years or more increased among the older mothers as the percentage of very short intervals declined.⁸²

The excess mortality among babies born in 1915 who followed a preceding birth by an interval of less than two years appeared especially in deaths from causes other than early infancy. For example, the babies following a previous birth by two years or longer had a mortality from these "other causes" which increased with the later orders of birth, but for each order of birth the short interval babies showed a higher rate from "other causes" than the rates in the other group. For the causes peculiar to early infancy, on the other hand, the short interval babies earlier than seventh in order of birth had rates definitely higher than the babies who followed a previous birth by two or three years; and the babies seventh or later in order of birth showed no differences in rates according to interval.⁸³ It would seem, therefore, that short intervals between births affect

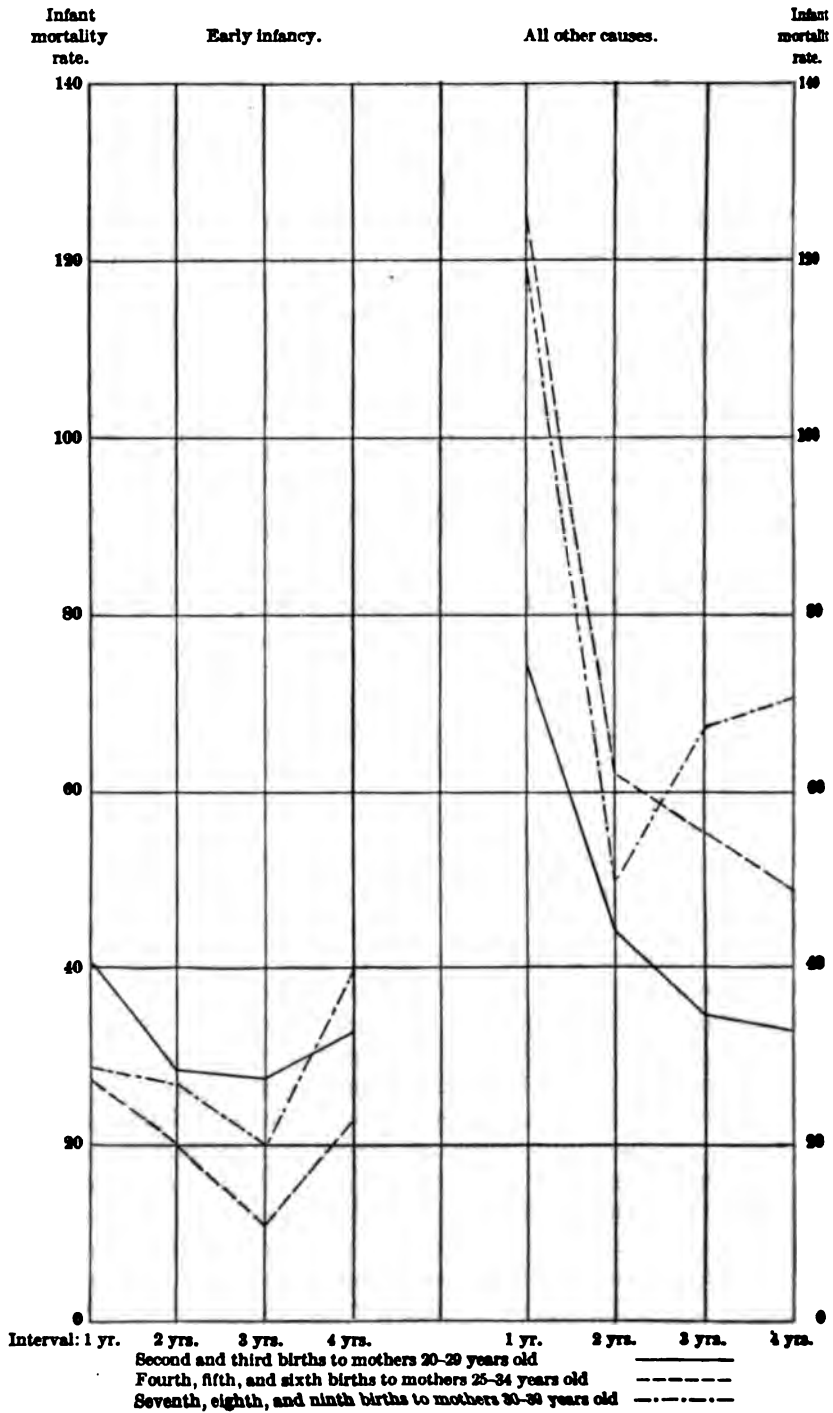
⁸¹ See Table 165, Appendix VII, p. 357.

⁸² See Table 166, Appendix VII, p. 358.

⁸³ See Table 167, Appendix VII, p. 358.

INFANT MORTALITY, BALTIMORE, MD.

CHART XXI.—Infant mortality rates from early infancy and from all causes for each order of birth group by interval since preceding birth; single births in 1915.



the care the mother is able to give the baby more than they affect the physical condition of the mother herself.

Again, at each age period of the mother, except among mothers less than 20 years old, there was a relatively high mortality from "other causes" among the short interval babies but no clear difference by interval in the mortality from early infancy. Under 20, however, the mortality from early infancy rose markedly among the short interval babies, while for all babies alike the mortality from "other causes" was high.⁸⁴

Variations in mortality according to the age of the mother and the order of the baby's birth can not, therefore, except in this group of babies born to mothers less than 20 years old, be ascribed to the prevalence in certain groups of short intervals between births. In fact, when all the babies who followed the preceding birth by an interval of less than two years are eliminated, the characteristic curves in the rates persist, except that the rise in the curve for causes peculiar to early infancy among babies of mothers under 20 years of age disappears. But while the curves have the same general outlines they are at several points lower when the short interval babies have been eliminated than they are for the entire group, and most notably so in the rates for causes other than early infancy among babies fourth to ninth in order of birth born to mothers 25 years old or older.^{84a}

TABLE V.—*Infant mortality rate,¹ by interval since preceding birth,² order of birth,³ and age of mother; live births in 1915.*

Age of mother and order of birth. ³	Infant mortality rate. ¹	
	Interval under 2 years.	Interval 2 years and over.
Second and third births:		
Under 20 years.....	160.6	70.4
20-34 years.....	113.0	107.3
35 years and over.....		
Fourth to sixth births:		
20-34 years.....	142.3	81.2
35 years and over.....		82.9
Seventh and later births:		
20-34 years.....	196.7	116.4
35 years and over.....	185.0	122.6

¹ Not shown where base is less than 100.

² Includes miscarriages.

Summary.

It may fairly be concluded that although these three factors are closely bound together, yet each makes its own contribution to the general problem. In grouping the births according to the order of birth, it is found that, independently of age and interval, the births

⁸⁴ See Table 168, Appendix VII, p. 359.

^{84a} See Table 169, Appendix VII, p. 360.

seventh and later in order had a mortality higher than earlier births. The babies of mothers under 20 or over 35 years of age in general faced a greater hazard than other babies, although to this general rule there were certain exceptions. And the short-interval babies had throughout higher rates than other babies of the same orders of birth born to mothers of the same age periods.

Variations in rate with the different age periods of the mother appeared in the deaths from early infancy and also in the deaths from all other causes. But variations with the different orders of birth and the different intervals between births appeared more markedly in the mortality from other causes than in the mortality from early infancy.

Large families and short intervals were especially a problem in the poorer homes, where they were somewhat more prevalent than in prosperous homes. In the small group of prosperous homes the excess mortality that accompanied them elsewhere was greatly diminished or seemed to disappear entirely.

PLURAL BIRTHS.

Plural births show an infant mortality from two to four times as high as the infant mortality among single births, but the number of plural births is small and they are not, therefore, an important factor in the total mortality of a community. For example, if no plural births had occurred in the Baltimore group of births during 1915 the infant mortality rate would have been 97.1 per 1,000 instead of 103.5 per 1,000.⁵⁴

Just over 1 per cent of the pregnancies studied resulted in plural births. Of all the births during 1915, 2.5 per cent were plural. But the losses among plural births were so great that, among the infants born in 1915 and surviving their first year of life, the number of twins or triplets was 1.7 per cent of the total survivors.

The three color and nativity groups showed practically no variation in the percentage of plural births. But there was a slight variation according to the age of the mother and the number of children she had borne. The younger mothers showed fewer plural births than the older mothers, the percentage of plural births increasing steadily from approximately 1 per cent among the mothers under 20 years of age to approximately 4 per cent among the mothers 35 years of age or over. A similar increase appears when the first, second, third, and later births are compared. Analysis of the births during 1915 seems to indicate that order of birth and age of mother are independent factors in the prevalence of plural births.⁵⁵

⁵⁴ See Tables 170, 171, 172, and 173, Appendix VII, pp. 361-362.

⁵⁵ See Tables 174, 175, 176, and 177, Appendix VII, pp. 362-363.

It is clear, also, that the mother who has once had a plural birth is more likely than other mothers to have plural births. Of the 38,211 pregnancies studied, 1.1 per cent resulted in plural births; of the 734 pregnancies subsequent to a plural birth, 3.7 per cent resulted in plural births. This simply indicates that the second occurrence of a plural birth is correlated with the occurrence of a first plural birth.

TABLE VI.—Loss rates—Comparison of single and plural births¹ in 1915.

Type of loss.	Loss rates.	
	Single births.	Plural births.
Miscarriages (per 100 births) ¹	3.6	5.4
Stillbirths (per 100 births).....	3.6	7.1
Infant mortality (per 1,000 live births).....	97.1	361.5
Early infancy.....	33.9	192.3
All other causes.....	63.2	169.2

¹ Includes miscarriages.

In every sense the losses were high among plural births. Miscarriages, stillbirths, and infant deaths were all more numerous among plural than among single births. The infant mortality among plural births showed its greatest excess in deaths from early infancy, but it was also high from all other causes combined. There was among the plural births a high percentage of premature births, but it was also found that among the full-term plural births the mortality rate (266 per 1,000) was more than three times the mortality rate (73.9 per 1,000) among the full-term single births.⁸⁶

TABLE VII.—Computed annual infant mortality rates, by type of feeding; comparison of plural and all live births in 1915.

Type of feeding.	Computed infant mortality rate.	
	All births.	Plural births.
Not fed; died at once.....	24.1	88.5
Breast fed.....	43.3	132.2
Mixed fed.....	87.4	256.2
Artificially fed.....	191.4	399.0

Among the plural births,⁸⁷ the percentage of infants artificially fed was high at each month from the first to the tenth; but, again, for each type of feeding considered separately, the computed rate per 1,000 infants fed was markedly higher among the plural-born than among the single-born children.

⁸⁶ See Tables 178 and 179, Appendix VII, pp. 363 and 364.

⁸⁷ See Table 180, Appendix VII, p. 364.

Of the 403 pregnancies⁸⁸ resulting in twin births, 40, or 9.9 per cent, ended in miscarriage of both fetuses and 3, or 0.7 per cent, ended in miscarriage of one fetus and live birth of the other. Among the pregnancies resulting in single births, on the other hand, 6.6 per cent ended in miscarriage.

Again, of these 403 pregnancies resulting in twin births, 9, or 2.2 per cent, ended in the stillbirths of both infants and 34, or 8.4 per cent, ended in the stillbirth of one infant and the live birth of the other. But among the pregnancies resulting in single births, only 3.3 per cent ended in stillbirth.

In 317 cases the twins were both born alive, and 150 pairs of twins, or 47 per cent of these plural live births, survived the first year; 90 pairs of twins, or 28 per cent of these plural live births died; and for each of 77 pairs of twins, or 24 per cent, there were one survivor and one infant death.

TABLE VIII.—*Survival or death of twins in pairs; births,¹ all pregnancies.*

Total pairs of twins.....	403	1 stillbirth and 1 live birth (survivals, 23; deaths, 11).....	34
Both miscarriages.....	40	1 miscarriage and 1 live birth (survival, 1; deaths, 2).....	3
Both stillbirths.....	9		
Both live births.....	317		
Both deaths.....	90		
1 survival and 1 death.....	77		
Both survivals.....	150		

¹ Includes miscarriages.

The infant mortality rate among these 634 twins who were both born alive was 405.4 per 1,000. But note the distribution of deaths and survivals. The twins tended both to survive or both to die. If the average mortality rate for the whole group of 634 twin-born infants had applied to them as individuals, the probable distribution of deaths would have doubled the number of cases where one twin survived and one twin died and reduced, correspondingly, the numbers of cases where both died or both survived.⁸⁹

⁸⁸ Among the total pregnancies the mothers had had.

⁸⁹ NOTE.—

	Pairs of twins.	
	Actual distribution.	Computed distribution.
Total.....	317	317
Both deaths.....	90	52.1
1 survival, 1 death.....	77	152.8
Both survivals.....	150	112.1

"Computed distribution" is derived from chance of death and chance of survival indicated in the average rate for the 634 infants—405.4 deaths per 1,000 live births. p = chance of death, or 0.4054; q = chance of survival, or 1 minus 0.4054, which is 0.5946. The formula $p^2 + 2pq + q^2$ gives the following expected distributions:

Both deaths = $317 \times (0.4054)^2 = 52.1$.
 One died, one survived = $317 \times 2(0.4054)(0.5946) = 152.8$.
 Both survived = $317 \times (0.5946)^2 = 112.1$

PREMATURE BIRTHS.

Premature birth resulted in excessive mortality, especially during the first month of life, and in excessive losses from stillbirth and miscarriage. If the mortality rates among infants born at full term had been applicable to the entire group, the losses from stillbirth and miscarriage would have been 2.2 instead of 7 per 100 births, and the infant mortality rate would have been 77.7 instead of 103.5 per 1,000 live births. These differences indicate fairly the part played by premature birth in the total mortality. They do not reveal clearly the very great difference in hazard to infants born at full term and infants born prematurely.

Among the 11,613 births in 1915 and included in the study, 1,173 or 1 in 10 were born prematurely. Of these premature births, approximately one-half were stillborn; and of the live born premature infants, less than one-half survived 12 months. Five hundred and seven were born after less than seven months gestation, and in this group only 89 were live born and only 3 survived the year. Six hundred and sixty-four were born after seven months but less than nine months gestation, and in this group 500 were live born and 266 survived the year.

Comparing these losses with the losses among the full-term births, it appears that among the premature births 49.6 per cent of the births were stillborn (or miscarried) instead of 2.2 per cent stillborn, and 544.8 per 1,000 instead of 77.7 per 1,000 live births died within the year. Even when the births of less than seven months gestation are eliminated there was among the premature births a stillbirth rate of 24.7 per 100 births and an infant mortality rate of 468 per 1,000 live births.

The difference in mortality rates among premature and full-term births was greatest during the first month—453.5 per 1,000 live births in one group and 20.4 per 1,000 live births in the other group; after the third month the mortality among the prematurely born was still higher than among the others but the difference then was slight.⁸⁰

It has been noted in the analysis of the infant deaths in the Baltimore group that 477, or 43 per cent of the total, occurred within one month after birth. Of these deaths during the first month, 56 per cent occurred among infants prematurely born, although premature births were less than 6 per cent of the total live births.

It would seem, therefore, that the prevention of deaths in early infancy and the prevention of premature births are closely related to each other and alike depend on protection of the mother. The relatively high percentages of premature births which have been

⁸⁰ See Tables 181 and 182, Appendix VII, pp. 364 and 365.

noted among the first-born children and among all children of young mothers emphasize the great importance of adequate care and instruction for young mothers and for all mothers during their first pregnancy. The high percentage of premature births previously noted, also, among mothers gainfully employed away from home during pregnancy emphasizes the importance of freedom from physical strain.⁹¹ In all groups the percentage of premature births could doubtless have been greatly reduced by the general application of known principles of hygiene and medical care.

SEX OF INFANT.

The Baltimore group offered no exception to the general fact that male infants have a higher mortality than female infants. This appeared in a higher percentage of miscarriages, a higher stillbirth rate, a higher percentage of premature births, and a higher mortality among the full-term live-born infants.

TABLE IX.—Loss rates, by sex; births¹ in 1915.

Type of loss.	Loss rates.	
	Male.	Female.
Miscarriages (per 100 births ¹).....	3.4	1.6
Stillbirths (per 100 births).....	3.8	3.3
Premature births (per 100 live births).....	5.9	5.0
Infant mortality rate (all live births).....	115.1	91.3
Infant mortality rate (full-term live births).....	87.3	67.7
Infant mortality rate (premature live births).....	553.5	534.1

¹ Includes miscarriages.

The total number of male births was higher than the total number of female births in the native and foreign-born white families, and, in spite of the higher mortality among male infants, the number of males surviving the first year was also slightly higher than the number of females surviving the first year in these two groups. Among the colored births, on the other hand, there were more female births than male births and markedly more female survivors than male survivors.⁹²

MATERNAL DEATHS.

When a mother dies from childbirth or from any other cause within 12 months after a birth, her baby faces a special hazard. In the Baltimore group 106 births, including 72 live births, were to mothers who died during the following year. Among these live-born infants the mortality rate from all causes was 486.1 per 1,000, with a mortality from early infancy alone of 250 per 1,000. Among

⁹¹ See p. 117.

⁹² See Tables 183 and 184, Appendix VII, pp. 365 and 366.

the 32 live-born infants whose mothers died within 2 months after childbirth, or later in the year from a cause known to be connected with childbirth, the mortality rate from all causes rose to 625 per 1,000 and the mortality from early infancy to 375 per 1,000 live births. Even in so small a group, these rates indicate an excess hazard far beyond the range of a chance variation from the rates for infants whose mothers lived throughout the year—100.9 from all causes and 36.3 from the diseases of early infancy.

TABLE X.—*Infant mortality rates from specified causes, by survival or death of mother; live births in 1915.*

Survival or death of mother.	Live births.	Infant mortality rate.			
		All causes.	Gastric and intestinal diseases.	Early infancy.	All other causes.
Mothers surviving.....	10,725	100.9	28.6	36.3	36.0
Mothers dying.....	72	486.1	97.2	250.0	138.9
From childbirth or within 2 months.....	32	625.0	93.8	375.0	136.3
All other.....	40	375.0	100.0	150.0	125.0

The excess in mortality from gastric and intestinal diseases and from all other causes was less than the excess in mortality from early infancy and showed no such marked variation between the infants of mothers who died within 2 months after childbirth and the infants of mothers who died later in the year.

Among the births (whether miscarriages, stillbirths, or live births) to mothers who died within the year after the baby's birth a markedly high percentage of premature births was found, but this accounts only in part for the excessive infant mortality among infants whose mothers died. When the premature births and the full-term births are considered separately it appears that in each group the live-born infants whose mothers died within the year had a higher mortality than other live-born infants in the same group; but it is noted that the high mortality among premature infants whose mothers died was assigned wholly to early infancy while the high mortality among full-term infants whose mothers died was due to other causes.⁹³

Of the 106 births to the mothers who died, 34 were stillborn (or miscarried)—a total of 32.1 per cent. Of the 11,507 births to mothers who lived, 782 were stillborn (or miscarried)—a total rate of 6.8 per cent. Among the premature births the difference in loss was less marked in the two groups—54 per cent where the mother died and 49.5 per cent where the mother lived. But among the full-term births, the still-birth rate (20.3 per cent) was about 10 times higher when the mother died than when the mother lived (2.1 per cent).

⁹³ See Table 185, Appendix VII, p. 367.

Evidently the relation is close between hazard to the mother and hazard to her child. The live-born baby whose mother dies may suffer from the prenatal effect of the condition which leads to the mother's death; it may suffer from the lack of the mother's nursing and care. Premature birth and stillbirth or miscarriage may also result from a condition which leads afterwards to the mother's death. The data show unmistakably that a high infant mortality, a high percentage of prematurity, and high losses from stillbirth and miscarriage accompany the mothers' deaths.

Perhaps this relation appears even more clearly if the mortality rates among the mothers are considered. In the group as a whole 105 maternal deaths occurred within one year after the birth, or 9.7 per 1,000 live births. Fifty of these deaths were assigned to causes connected with childbirth; 18, or 1.7 per 1,000 live births, to puerperal septicemia; 14, or 1.3 per 1,000 live births, to puerperal albuminuria and convulsions; and 18, or 1.7 per 1,000 live births, to all other causes related to childbirth. But in addition to these 50 mothers whose deaths were ascribed to childbirth, 7 others died within one month, 4 after one month but in less than two months, and 7 after two months but within three months after confinement. If the confinement was a contributing cause of the mother's death in these 18 cases the actual loss from deaths related to childbirth would be approximately 6.3 per 1,000 live births. But these rates vary with the nature of the birth.

Among the 798 confinements resulting in stillbirths and miscarriages, 29 mothers died from causes related to childbirth or from other stated cause within three months after the birth—a death rate within the year of 36.3 per 1,000 confinements. But among the 10,665 resulting in live births, 39 mothers died from causes related to childbirth or from other stated cause within three months after the birth—a death rate within the year of 3.7 per 1,000 confinements.

Again, among the 1,131 mothers prematurely confined (whether with miscarriage, stillbirth, or live birth), 28 mothers died from such cause—a death rate of 24.8 per 1,000 confinements. And among the 562 mothers prematurely delivered of live-born children, considered by themselves, 13 mothers died from such causes—a death rate of 23.1 per 1,000 confinements.

On the other hand, among the 10,322 mothers delivered at full term, 40 maternal deaths occurred from such causes, or a death rate of 3.9 per 1,000 confinements. Behind this average, again, there was an excessive maternal death rate of 61.7 per 1,000 confinements among the 227 mothers delivered at term of stillborn infants, and a rate lower than the average for the entire group only among the mothers delivered at term of live-born infants.

STILLBIRTHS.

From the mothers' statements about all their pregnancies, it appears that in the group as a whole the total number of stillbirths and miscarriages, among the 38,630 births reported, was equal to 91 per cent of the total number of infant deaths occurring among their live-born infants—3,786 stillbirths and miscarriages and 4,158 infants deaths. In the Jewish families, with their exceptionally low infant mortality, the number of stillbirths and miscarriages—309—was greater than the number of infant deaths—232. And in the colored families, with their exceptionally high miscarriage and stillbirth rates (as well as high infant mortality), the number of stillbirths and miscarriages—842—was also greater than the number of infant deaths—751. Only among the Polish families and the foreign other than Jewish, Polish, or Italian, were the total stillbirths and miscarriages markedly fewer than the infant deaths. The Poles, with an excessive infant mortality (chiefly from gastric and intestinal diseases) had an average stillbirth rate and a miscarriage rate below the average. The group of "other foreign" families showed an average mortality and average stillbirth rate but, like the Poles, a miscarriage rate below the average.²⁴

In the present study the word "stillbirth" refers to dead births of at least seven months gestation and "miscarriage" to dead births of a shorter term. The substantial agreement in stillbirth rates shown in the two sets of data suggests a fairly complete reporting of stillbirths, both in the registration of births during 1915 and in the mothers' statements about their previous pregnancies. On the other hand, registration of miscarriages seems to have been far from complete, since the miscarriage rates based on births during 1915 were in every nationality group markedly lower than the miscarriage rates based on all pregnancies. Whether the mothers' reporting of miscarriages was itself complete is a question that can not be determined. It may be noted, however, that the variations in miscarriage rate by nationality were approximately the same in the two sets of data—the colored rate above the average for all and the Polish and "other foreign" rates below the average for all.

The average loss from miscarriages (all pregnancies) was 67 per 1,000 births and the average loss from stillbirths (all pregnancies) was 33 per 1,000 births.

²⁴ See Tables 187 and 188, Appendix VII, p. 368.

Certain variations in stillbirth rates have been noted in earlier sections of the report: The rate rises with the mothers' employment away from home during pregnancy, with the mother's advancing years, and with the bearing of very large families.*

What relation is there between stillbirth and infant mortality? Medical authorities agree that many of the causes of stillbirth and of deaths from causes peculiar to early infancy are identical. One would expect, therefore, to find the variations in stillbirth rates and in mortality from early infancy following the same general trend in the several groups. And it is true that the colored families, with a high infant mortality, especially high from early infancy, had the highest stillbirth rate in the Baltimore group. But the foreign-born Jewish families, with a low infant mortality, including a low rate from the causes peculiar to early infancy, the Polish families, with a high infant mortality and a rate above the average from early infancy, and the Italian families, with an average infant mortality and a rate somewhat below the average from early infancy, had approximately equal stillbirth rates, with such difference as there was tending toward a high stillbirth rate in the Italian families and a low stillbirth rate in the Polish families. Again, the foreign-born white group as a whole had a lower mortality from early infancy than the native-white group, but the stillbirth rates in the two groups were practically identical.

Except in the colored group, therefore, the data show no coincidence of stillbirths and infant deaths. .

* See Tables 73, 103, 104, 132, 133, 144, 145, 149, 154, 189, and 190, Appendix VII, pp. 282, 306, 308, 283, 341, 342, 344, 348, 368, and 369.

ILLEGITIMATE BIRTHS.

It has been noted that certain families were excluded from the study of the normal group because of temporary absence from Baltimore or removal from the city. In studying the babies born out of wedlock a different method was followed. Information was secured about every baby of illegitimate birth for whom the facts could be ascertained, whether the baby and mother were still living in Baltimore or had left the city. One source of information was the birth and death certificates, and (since none but registered births were included) information was available from the birth certificates for all infants. This method of study, however, offered a complication in computing an infant mortality rate, since only deaths that occurred within the city were registered in Baltimore.⁹⁰

Besides securing this information, every effort was made to obtain an interview with the mother and to add detailed information on points not covered in the birth or death certificates. Shifting of residence of mother and baby was so frequent an occurrence that it was difficult to locate the mothers. A special effort was made, therefore, to secure information in regard to this shifting of residence and separation of mother and baby that are so characteristic of the life of the illegitimate baby.

THE MOTHERS.

Color and nativity.

Of the 12,045 births to white mothers registered as occurring during 1915 in Baltimore, 420, or 3.5 per cent, were illegitimate. Of the 2,555 births to colored mothers, 704, or 27.6 per cent, were illegitimate. In the illegitimate white group, less than half (192, or 45.7 per cent) were scheduled; in the illegitimate colored group, more than two-thirds (487, or 69.2 per cent) were scheduled.^{90a}

TABLE I.—Color, nativity, and parentage of mother, by legitimacy of birth; scheduled legitimate and illegitimate births in 1915.

Color, nativity, and parentage of mother.	Legitimate births.		Illegitimate births.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	11,613	100.0	679	100.0
White mothers.....	10,104	87.0	192	28.3
Native.....	7,210	62.1	174	25.6
Both parents native.....	(a)	(a)	111	16.3
One or both parents foreign.....	(a)	(a)	43	6.3
Parentage not reported.....	(a)	(a)	20	2.9
Foreign born ^b	2,894	24.9	18	2.7
Colored mothers.....	1,509	13.0	487	71.7

^a Parentage of mothers of legitimate children not reported, but compare census figures shown on p. 28.

^b Foreign-born white mothers of illegitimate children include 8 Polish, 3 German, 1 English, 1 Irish, 1 Scotch, 1 Lettish, 2 Russian Jewish, and 1 other Jewish. For nationalities of legitimate mothers see p. 29.

⁹⁰ See p. 168.

^{90a} See Table 191, Appendix VII, p. 369.

The nativity of the white mothers was tabulated only for the scheduled group, and among these 192 white mothers were 18 women of foreign birth, a percentage about one-third of the percentage of foreign-born women in the group of legitimate births to white women. It is not known whether the larger group of unscheduled illegitimate white births included also a low percentage of foreign-born women.

Employment.

Women employed outside their homes predominated, both among the white and colored mothers of children born out of wedlock. In the large group (total registered illegitimate births), the fact of the mother's employment or nonemployment during pregnancy was not reported for 31 per cent of the white women and 14 per cent of the colored women, but 53 per cent of the white women and 70 per cent of the colored women were stated to have been employed outside their homes. Twelve per cent of the white women and 10 per cent of the colored women were reported as not employed during pregnancy.⁸⁷

Domestic service was the chief occupation among the colored women and ranked second to factory work in importance among the white women. The mothers of 491, or 70 per cent, of the colored births and 88, or 21 per cent, of the white births were in domestic service and kindred occupations, which included those of laundress, waitress, cook, or kitchen girl, charwoman, nursemaid, and chambermaid. Of the white women 102, or 24 per cent, were factory operatives and of the colored women 40, or 6 per cent. The other white women who were employed were stenographers or clerks (13), saleswomen (6), nurses (4), school teachers (3), seamstresses (10), and telephone operators (3). Eight white women and 4 colored women were scattered among the following occupations: Chorus girl, companion, hairdresser, demonstrator, peddler, florist's helper, proprietor of grocery store, farm worker, maid in hospital, maid in department store, lady's maid, and prostitute.⁸⁸

Age.

The extreme youth of most of the mothers of children born out of wedlock is noteworthy. Fifty-five of them (5 per cent) were under 16 years of age, 180 (16 per cent) were 16 and 17 years of age, and 274 (24 per cent) were 18 but less than 20 years of age. Six of the girls under 16 and 9 of the girls between 16 and 20 years old were school girls. In all, 87 (17 per cent) of these mothers under 20 years of age are known not to have been gainfully employed, while among the

⁸⁷ In the scheduled group, with a smaller percentage of mothers whose employment or nonemployment was not reported, there were relatively more employed away and more not employed. Only the percentage employed at home remained approximately the same as in the entire group. For exact figures, see Table 192, Appendix VII, p. 370.

⁸⁸ See Tables 193 and 194, Appendix VII, pp. 370 and 371.

mothers 20 years or older the number known not to have been gainfully employed was only 6 per cent of the total. The colored mothers were somewhat younger than the white mothers—with 26 per cent under 18 years of age among the colored mothers and 13 per cent under 18 years of age among the white mothers. But, on the other hand, fewer of the colored mothers than of the white mothers were between 20 and 25 years of age, and among the colored mothers 12 per cent, but among the white mothers 9 per cent, were 30 years of age or older.⁹⁹

Civil condition at confinement.

The civil condition of the mother at the time of the birth¹ is known only for the scheduled group, and even here it is not known for seven, or 4 per cent, of the white mothers and four, or 0.8 per cent, of the colored mothers. Of the white women, 78 per cent were single, 15 per cent were widowed, divorced, or separated from a husband, and 4 per cent were married. Of the colored women, 88 per cent were single, 11 per cent were widowed, divorced, or separated from a husband, and 1 per cent were married.¹

Previous births.

The illegitimate birth in 1915 was, in the majority of cases, the first the mother had borne, but one in four of the white mothers and about two in five of the colored mothers (scheduled group) had previously had at least one illegitimate birth. Among both the white and the colored women were a few, also, who had borne one or more legitimate children but no illegitimate child previous to the 1915 birth.

The order of birth of the illegitimate birth in 1915 is known for the entire group, with the exception of one white child and four colored children for whom it was not reported on the birth certificate. Eighty-two per cent of the white births and 58 per cent of the colored births were first-born children; 5 per cent of the white births and 15 per cent of the colored births were fourth or later-borne children. Cases other than the first birth proved slightly easier to trace, so in the scheduled group the percentage of first-born children dropped to 73 per cent of the white births and 55 per cent of the colored births.

Only for the scheduled group is the legitimacy of the previous births known. In this group (192 white and 487 colored) there were 52 white women and 219 colored women who had borne other children. For 4 white women and 9 colored women the legitimacy of the previous births was not reported; for 16 white women, or 8.3 per cent of the total scheduled, and for 21 colored women, or 4.3 per cent of the total scheduled, the previous births had all been legitimate. The white women had borne from 1 to 6 legitimate children and the colored

⁹⁹ See Tables 195 and 196, Appendix VII, pp. 371 and 372. ¹ See Table 197, Appendix VII, p. 372.

women from 1 to 9 legitimate children. Twenty-four white women (or 12.5 per cent of the total scheduled) and 165 colored women (or 33.9 per cent of the total scheduled) had borne only illegitimate children, the white women from 1 to 3 children previous to the birth of 1915 and the colored women from 1 to 12 children previous to the birth of 1915. In all, including the birth of 1915, these 24 white women had borne 57 illegitimate children and these 165 colored women had borne 531 illegitimate children. In addition, 8 white women and 24 colored women (4.2 per cent and 4.9 per cent, respectively, of the totals scheduled) had borne at least 1 illegitimate and 1 legitimate child previous to the birth of 1915, or a total, including the birth of 1915, of 59 white children and 162 colored children.²

Literacy.

One other item is known about the scheduled mothers of illegitimate children. A slightly higher percentage of these women than of the mothers in the legitimate group were illiterate—10.9 per cent of the white women, instead of 9.3 per cent, and 16.2 per cent of the colored women, instead of 12.4 per cent.

THE FATHERS.

Information about the fathers is comparatively meager. The birth certificates supposedly state the father's color, age, and occupation, but the age was not reported for 29.5 per cent of the fathers of white children and 9.5 per cent of the fathers of colored children,³ and the occupation was not reported for 35.5 per cent of the fathers of white children and 11.8 per cent of the fathers of colored children. The father's color was stated, however, for all except the fathers of 15, or 2.1 per cent, of the births to colored women.

Two of the 420 white women had births by colored fathers. About these colored fathers nothing is stated except that one had died before the birth. Two of the 704 colored mothers are stated to have had births by white fathers, one classed as "teamster, chauffeur, or delivery man," and one as "clerk." But there may have been other white fathers in the group of 15 cases where the mother was colored and the color of the father was not reported. The occupations of these 15 fathers were not reported.

Unfortunately, the occupations of the fathers as stated on the birth certificates do not lend themselves to exact classification or comparison with the occupations of the fathers of legitimate children. The fathers were so scattered through the various types of occupations that, except for the 277 colored laborers and the 88 colored "teamsters, chauffeurs, and delivery men," the number of white or

² See Tables 198, 199, and 200, Appendix VII, pp. 373, 374, and 375.

³ See Tables 201 and 202, Appendix VII, pp. 375 and 376.

colored fathers of children born out of wedlock in any 1 of the 19 occupations given was less than 40 and frequently less than 10. Moreover, any conclusions as to the prevalence of certain types of occupations among the fathers of illegitimate children based on less than two-thirds of the white group and less than nine-tenths of the colored group would, in any case, be subject to serious error. Inexact registration of occupation is also an important factor. The number of colored "laborers," for example, in the illegitimate group, represented 45.6 per cent of the colored fathers in that group having a stated occupation, while in the colored legitimate group 34.5 per cent of the fathers having a stated occupation were classified as laborers. This apparent excess of laborers in the illegitimate group might indicate nothing but a tendency on the part of physicians and midwives to classify all unskilled workers as laborers.⁴

Both the white and colored fathers seem to have been older than the mothers. Omitting the 124 white fathers and the 67 colored fathers whose ages were not reported, in the white group 6 per cent were under 20 years of age and 20 per cent 30 years of age or older; in the colored group, 14 per cent were under 20 years of age and 25 per cent 30 years of age or older.⁵

THE BIRTHS.

Place of confinement and attendant at birth.

Far more of the illegitimate births than of the others occurred in hospitals. In the total group of illegitimate births, 46 per cent were hospital births as against 13 per cent in the total group of legitimate births and 10 per cent in the scheduled group of legitimate births.

Fifty-six illegitimate births, or 5 per cent of the total, occurred in institutions, including two infants born in jail. The illegitimate births in hospitals and institutions were more difficult to trace than those in private houses. Less than half the hospital births were scheduled and only 10 of the 56 births in institutions, while of the 551 births in private houses 424 were studied in detail. But even with the relatively small number of hospital births included in the scheduled group there still was in that group a percentage of hospital births (36 per cent of the total number scheduled) far in excess of the percentage of hospital births in the legitimate groups.

A relatively high percentage of births attended by physicians accompanied, of course, the high percentage of hospital births in the illegitimate group.⁶

Prenatal care.

For the scheduled illegitimate births, information was secured about the mother's prenatal care. Of the white women the per-

⁴ See Table 201, Appendix VII, p. 375.

⁶ See Tables 203 and 204, Appendix VII, p. 377.

⁵ See Table 202, Appendix VII, p. 376.

centage reporting no prenatal care by a physician was the same among the legitimate and the illegitimate births, but a slightly smaller percentage of the mothers of children born out of wedlock than of the others reported prenatal care of grade A or B. Among the colored mothers of children born out of wedlock, however, a smaller percentage reported no prenatal care and a slightly higher percentage reported prenatal care of grade A or B than among the legitimate colored mothers.^{6a}

CONDITIONS DURING YEAR AFTER BIRTH⁷

Relation of mothers and fathers.

Thirteen per cent (25) of the white mothers of children born out of wedlock and 18 per cent (86) of the colored mothers lived with the men by whom they had borne children in 1915 during the whole or the greater part of the year following the birth. But although more of the colored mothers than of the white mothers lived with the fathers of their children, slightly more of the white mothers than of the colored mothers were married to them during the year—10 per cent of the white mothers and 8 per cent of the colored mothers. These marriages include in the white group 2 women (or 1 per cent of all the white mothers) and in the colored group 9 women (or 2 per cent of all the colored mothers) who did not live with the fathers of their children during the greater part of the year following the 1915 birth.⁸

In addition to these 25 white women and 86 colored women who lived with the men by whom they had borne illegitimate children in 1915, there were 50 white women, or 26 per cent of the total, and 171 colored women, or 35 per cent of the total, who reported that the fathers of their children had contributed something to their own or their child's support. For 12 per cent of the white women and 4 per cent of the colored women, no report was made as to whether or not the father contributed to the support of mother or child. The median amounts contributed by both the white and the colored fathers were between \$50 and \$100. In the colored group, however, there were relatively more contributing under \$5—4 per cent (17) instead of 0.5 per cent (1) of the white group—and also relatively more contributing \$100 and over—9 per cent (45) instead of 6 per cent (13).

The number of fathers who did not live with the mothers and contributed nothing to the support of mother or child was relatively greater in the white group than in the colored group—white, 49 per cent (94); colored, 43 per cent (211).

^{6a} See Table 205, Appendix VII, p. 378.

⁷ The statements about conditions during the year following the birth are based entirely on the scheduled group—192 white issues and 487 colored issues.

⁸ See Tables 197 and 206, Appendix VII, pp. 372 and 378.

In both groups the percentage who contributed nothing to the mother's support was higher where the birth was a stillbirth or miscarriage than where it was a live-born infant. The difference was especially marked in the white group. But even where the infants were live-born, more of the white fathers than of the colored fathers contributed nothing to the support of mother or child.⁹

Where the mothers lived.

Two-fifths of the mothers in both groups lived in their parental homes during the year after the birth. And these women, together with the women who lived with the child's father, were considerably more than half of the mothers, both white and colored.

It has been noted that more of the colored mothers than of the white mothers lived with the fathers of their children. It was found also that more of the colored mothers than of the white mothers lived with relatives or friends other than their parents or the fathers of their children. On the other hand, 10 per cent (19) of the white mothers but none of the colored mothers lived in an institution or hospital.

TABLE II.—*Mother's mode of living during whole or greater part of year after confinement; scheduled illegitimate births¹ in 1915.*

Mother's mode of living during whole or greater part of year after confinement.	Per cent distribution: scheduled illegitimate births in 1915.	
	White mothers.	Colored mothers.
Total.....	100.0	100.0
Parental home.....	41.1	40.2
With other relatives or friends.....	6.3	11.5
With father of child.....	13.0	17.7
Own establishment or boarding.....	12.0	12.3
At service.....	3.1	3.1
In institution or hospital.....	9.9	.....
With husband or other man (not father of child).....	2.6	2.3
Died.....	1.6	2.3
Not reported.....	10.4	10.7

¹ Includes miscarriages.

The white group studied in detail includes 39 stillbirths, miscarriages, and infant deaths under 2 weeks of age and 153 infants who lived at least two weeks. The colored group includes 112 stillbirths, miscarriages, and infant deaths under 2 weeks of age and 375 infants who lived at least two weeks. A comparison of the mode of living of the mothers whose babies lived two weeks and of the others reveals certain differences which can not be pressed to definite conclusions but which should be noted. Among the women whose in-

⁹ See Tables 207 and 208, Appendix VII, pp. 379 and 380.

fants had survived the first two weeks certain types of living arrangements were reported by relatively more than among the mothers of dead births or of infants dying within two weeks after birth. Thus, in the white and in the colored group, more mothers were living independently, more mothers were living at service, and more mothers were living with friends or relatives other than their parents. And among the white mothers, also, a higher percentage were in an institution or a hospital and among the colored mothers a higher percentage lived in their parental homes. On the other hand, fewer, both of the white and of the colored women, were living with the father of the child or with some other man, and among the white women fewer were living in their parental homes.

TABLE III.—*Mother's mode of living during whole or greater part of year after confinement, by color of mother; scheduled illegitimate births¹ in 1915.*

Mother's mode of living during whole or greater part of year after confinement.	Per cent distribution: ² scheduled illegitimate births ¹ in 1915.			
	White mothers.		Colored mothers.	
	Stillbirths, miscarriages, or deaths under 2 weeks.	Infants surviving 2 weeks.	Stillbirths, miscarriages, or deaths under 2 weeks.	Infants surviving 2 weeks.
Total.....	100.0	100.0	100.0	100.0
Parental home.....		40.5	35.7	41.6
With other relatives or friends.....		6.5	6.3	13.1
With father of child.....		12.4	21.4	16.5
Own establishment or boarding.....		12.4	9.8	13.1
At service.....		3.9	2.7	3.2
In institution or hospital.....		11.1	.....	.....
With husband or other man (not father of child).....		1.3	4.5	1.6
Died.....		.7	3.6	1.9
Not reported.....		11.1	16.1	9.1

¹ Includes miscarriages.

² Not shown where base is less than 100. See Table 206, Appendix VII, pp. 373-379.

Civil condition of mother at one year after confinement.

It has been noted that 4 per cent (7) of the white mothers of children born out of wedlock and 1 per cent (5) of the colored mothers were married women; and, further, that 3 per cent (5) of the white mothers and 2 per cent (11) of the colored mothers in this group lived during the whole or the greater part of the year following the confinement with a husband or some other man, not the father of the illegitimate child born in 1915. Comparing the civil condition of the mother at confinement with her civil condition one year later, it is found that these women who spent the whole or the greater part of the year with a husband or some other man were only part of the total number who definitely reported marriage during the year to a man other than the father of the illegitimate child.

Thus, among the white mothers 9 single women and 3 who had been widowed or divorced, were married to a man other than the father of the child, and of the 7 white mothers of children born out of wedlock who were married women, 6 were living at the end of the year. Apart, therefore, from the 15 white women whose civil condition at the end of the year was not reported, there were at least 13 white women, or 7 per cent of the total, who lived with a man other than the father of the illegitimate child at some time during the year after the birth, in addition to the 5 women (3 per cent of the total) who reported spending the whole or the greater part of the year with such a man.

Among the colored mothers 16 single women were married during the year to a man other than the father of the child and 5 had been married women at the time of the birth. Hence, apart from the 16 colored women whose civil condition at the end of the year was not reported, there were at least 17, or 4 per cent of the total, who lived with a man other than the father of the illegitimate child at some time during the year after the birth, in addition to the 11 women (2 per cent of the total) who reported spending the whole or the greater part of the year with such a man.

To what extent, if at all, the mothers of children born out of wedlock in either the white or the colored group lived with the fathers of their children or with other men for short periods during the year the data do not indicate.

Of the 149 single women among the white mothers of children born out of wedlock, 79 per cent were single at the end of the year, 11 per cent had been married to the father of the child, and 6 per cent had been married to another man. Of the 29 white mothers who had been widowed, divorced, or separated at the time of the birth, 69 per cent reported their civil condition as unchanged, 10 per cent had been married to the father of the child, and 10 per cent had been married to another man.

Of the 426 single women among the colored mothers of children born out of wedlock, 82 per cent were single at the end of the year, 9 per cent had been married to the father of the child, and 4 per cent had been married to another man. Of the 52 colored mothers who had been widowed, divorced, or separated at the time of the birth, 96 per cent reported their civil condition as unchanged a year later. Two per cent (1 mother) had been married, but whether to the father of the child or to another man is not known.

For 8 per cent of the white women and 3 per cent of the colored women the civil condition at the end of the year was not reported. These 15 white women included not only the 7 whose civil condition at the time of the birth was not reported but also 6 who were single

and 2 who were "widowed, divorced, or separated" at the time of the birth. And these 16 colored women included not only the 4 whose civil condition at the time of the birth was not reported but also 12 who were then single.¹⁰

Maternal deaths.

A relatively high percentage of these mothers are known to have died during the year. Classifying the maternal deaths according to the stated cause of death, it is found that among this group of mothers the deaths assigned to causes directly related to childbirth numbered 9 per 1,000 confinements, while among the mothers of children born in wedlock they numbered 4.4 per 1,000. Deaths occurring within the year but assigned to other causes numbered among these mothers 11.9 per 1,000 confinements, but among the mothers in the legitimate group 4.8 per 1,000. That the high maternal death rate in the illegitimate group is not due wholly to the large proportion of colored women, whose hazard in childbirth is usually greater than the hazard to white women, is suggested by the fact that in the legitimate group as a whole the maternal deaths from all stated causes were 9.2 per 1,000 confinements; in the illegitimate group the maternal deaths from all stated causes among white women totaled 15.7 per 1,000 confinements and among colored women 22.9 per 1,000. Evidently the death rate among mothers of children born out of wedlock is excessive, not only among the white mothers but also among the colored mothers, as compared with the rates among mothers in the legitimate group.¹¹

Economic status of the mothers.

Of the economic status of the mothers during the year after the birth of an illegitimate child in 1915 there is little exact information. Such data as there are indicate extreme poverty. It has been noted that 49 per cent (94) of the white mothers and 43 per cent (211) of the colored mothers did not live with the fathers of their children and received no support from them, and that the amounts paid toward the support of the mother and child by those fathers who did not live with them but made some contribution were in most cases very small. Fifty white fathers (26 per cent) and 171 colored fathers (35 per cent) made contributions, but only 13 of these white fathers and 45 of these colored fathers contributed \$100 or more. The median earnings of the white fathers and of the colored fathers who lived with the mother and whose earnings were stated were lower than the median earnings of white and of colored fathers in the normal

¹⁰ See Table 197, Appendix VII, p. 372.

¹¹ See Table 209, Appendix VII, p. 381.

group. Part of the difference may have been due to the relatively high percentage in the illegitimate groups whose earnings were not reported, and, furthermore, a difference appearing in a group so small as that of the fathers of children born out of wedlock who lived with the mothers during the year after the birth can not be pressed to definite conclusions.¹²

No information was obtained regarding the economic status of the mother's parents, or the extent to which the material needs of the mothers were provided for in the large number of cases where the women lived in their parental homes during the year after the birth. But 80 per cent of the women in the scheduled group were gainfully employed during the year before the birth and at least 77 per cent during the year after the birth. The actual percentages may have been even higher, since the fact of employment or nonemployment was not reported for 3 per cent during pregnancy and for 4 per cent during the year following. The earnings of the mothers were utterly inadequate for their support. Only 12 mothers of the 501 who worked during the year earned as much as \$350. Or, considering separately the 297 mothers who worked at least nine months of the year, it is found that more than half this group earned less than \$250, with 7 mothers earning less than \$50 in cash (although 4 of these received meals in addition) and 2 mothers working for room and board with no cash wages whatever.¹³

More than two-thirds (68 per cent) of the women who had been employed during pregnancy returned to their former occupations or to other occupations included in the same group; 20 per cent shifted to a new occupation; 11 per cent did not resume gainful employment; and for 2 per cent of those employed during pregnancy employment during the year following was not reported. Of the mothers who had not been employed during pregnancy, 40 per cent were employed during the year after the birth. Comparing the total numbers engaged in the five principal occupations during pregnancy and during the year following, it appears that the numbers working in domestic service and in factory work decreased while the numbers working in the occupations akin to domestic service—as laundress, waitress, cook, or kitchen girl, or as charwoman—increased.¹⁴

Where the babies lived.

One in three of the white babies and one in six of the colored babies were, at some time during the year, in an institution or a boarding home or boarding with a private family. The white babies were chiefly in institutions and the colored babies chiefly in boarding homes or boarding in private homes.

¹² See Table 207, Appendix VII, p. 379.

¹⁴ See Table 194, Appendix VII, p. 371.

¹³ See Tables 192, 194, and 210, Appendix VII, pp. 376, 371, and 382.

TABLE IV.—*Infant's place of residence, by color of mother; scheduled illegitimate live births in 1915.*

Infant's place of residence.	Scheduled illegitimate live births in 1915			
	White mothers.		Colored mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	163	100.0	400	100.0
Institution.....	29	17.8	4	1.0
Institution and boarded.....	6	3.7	1	.2
Boarding home.....	15	9.2	30	7.5
Boarded in private home.....	3	1.8	23	5.8
Boarding home and private home.....	1	.6	3	.7
Never inmate of institution or boarded.....	108	66.3	330	82.9
Not reported.....	1	.6		

But not all these infants spent the whole, or even the greater part, of the year, or of their lives, in an institution or boarding. Among those who survived the first two weeks of life, approximately four-fifths of the infants (78 per cent of the white infants and 82 per cent of the colored infants) spent more than half of the year (or of their lives) with their mothers. In addition, 4 per cent of the white infants and 1 per cent of the colored infants lived more than half the time with foster parents, and 4 per cent of the colored infants (but none of the white infants) with the mother's relatives. Among the remainder—the 18 per cent of the white infants and the 13 per cent of the colored infants who had survived the first two weeks of life and spent the greater part of the year in an institution or boarding—it appears again that institutions predominated for the white infants and boarding homes or boarding in private homes predominated for the colored infants.

TABLE V.—*Infant's place of residence during greater part of first year of life, by color of mother; scheduled illegitimate infants surviving the first two weeks.*

Infant's place of residence during greater part of first year.	Scheduled illegitimate infants surviving first 2 weeks.			
	White mothers.		Colored mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	153	100.0	375	100.0
With mother's relatives.....			13	3.5
With foster parents.....	6	3.9	4	1.1
In institution or hospital.....	16	10.5	1	.3
In boarding home.....	8	5.2	31	8.3
In private home.....	3	2.0	15	4.0
With others.....			2	.5
With mother.....	120	78.4	300	82.4
Never separated from mother.....	97	63.4	279	74.4
Away part of time.....	23	15.0	30	8.0

Of the 33 white infants away from the mother more than half the year 16 were among the 17 whose mothers' mode of living was not reported. And of the 66 colored infants away from the mother 30 were among the 34 whose mothers' mode of living was not reported. For the others, a smaller percentage of the infants in both the white and colored groups were away from the mother when she lived with the father or with another man than under any other circumstances. In the colored group, the next smallest percentage of infants away from the mother appeared in the group whose mothers lived in their parental homes. But this was not so in the white group. There the mothers living in an institution, the mothers having their own establishments or boarding, and the mothers living with relatives (other than parents) or with friends all showed a smaller percentage whose infants were separated from them than the mothers living in their parental homes.¹⁵

TABLE VI.—*Mother's mode of living, by color and separation of infant from mother; scheduled illegitimate infants surviving first two weeks.*

Mother's mode of living.	Scheduled illegitimate infants surviving the first 2 weeks.					
	White mothers.			Colored mothers.		
	Total.	Away from mother. ¹		Total.	Away from mother. ¹	
		Number.	Per cent.		Number.	Per cent.
Total.....	153	33	21.6	375	66	17.6
Parental home.....	62	10	16.1	156	7	4.5
With other relatives or friends.....	10	1	10.0	49	10	20.4
With father of child.....	19	.....	.....	62	2	3.2
Own establishment or boarding.....	19	2	10.5	49	4	8.2
At service.....	6	3	50.0	12	9	75.0
In institution or hospital.....	17	1	5.9	.....	.....	.....
With husband or other man (not father of child).....	2	.....	.....	6	.....	.....
Died.....	1	.....	.....	7	4	57.1
Not reported.....	17	16	94.1	34	30	88.2

¹ During whole or greater part of year, or of life.

SUMMARY OF SOCIAL BACKGROUND.

In so far, therefore, as the scheduled group, including 46 per cent of the total white illegitimate births and 69 per cent of the total colored illegitimate births occurring during 1915, offers a fair picture of the condition of these mothers and their babies, it indicates certain differences in the status of mothers of children born out of wedlock among the colored population and the white population which may account for the greater excess in mortality among white illegitimate infants, which is revealed in the discussion below of deaths and mortality rates.

¹⁵ For more detailed figures, see Table 211, Appendix VII, p. 383.

Births out of wedlock were more common among colored women than among white women. Not only was there a high percentage of illegitimate births in the total births during the year, but also among the colored mothers a relatively high percentage reported having borne several illegitimate children previously.

More of the colored than of the white mothers were single women; fewer had been widowed, divorced, or separated, fewer were married women at the time of the birth, and fewer were married either to the father of the child or to another man during the year following the birth. But, on the other hand, a higher percentage of the colored women than of the white women lived with the father of the child during the whole or the greater part of the year after the birth, and a higher percentage of the colored women than of the white women who did not live with the father of the child received some contribution from him toward their support, including a higher percentage in the colored group who received at least \$100 from the father of the child.

More of the colored mothers than of the white mothers kept their babies with them throughout the year (or until the baby's death within the year). And 20 per cent of the colored babies who were separated from their mothers—but none of the white babies who were separated from their mothers—were cared for by the mother's relatives.

The difference in the white and colored mothers' relation to their parental homes was most marked. The percentage who lived in their parental homes during the year after the birth was practically identical in the two groups as a whole. But in the colored group more mothers (instead of fewer) lived in their parental homes when the baby had survived the first two weeks than when the baby had died within two weeks or had been stillborn. And of all the mothers whose babies had survived two weeks and who lived in their parental homes, only 5 per cent in the colored group (instead of 16 per cent as in the white group) had their babies cared for elsewhere.

MORTALITY AMONG ILLEGITIMATE INFANTS.

The group of 1,124 illegitimate births registered as occurring in Baltimore during the year 1915, faced excessive hazards, but the mortality rates which can be computed for the illegitimate babies can not be pressed to exact comparisons with the legitimate group for two reasons: (1) The large number of illegitimate infants whose condition at the end of the year is not known (256 in a total of 955 live births) involves a wide margin of probable error in the rates based on the total illegitimate group; (2) in the scheduled group of illegitimate infants the basis of inclusion is broader than the basis of inclusion in the scheduled group of legitimate births, but the

difficulties of tracing the babies were so great that the scheduled group is relatively smaller among the illegitimate births than among the legitimate births and probably less representative of the entire number¹⁶ in social conditions and in mortality rates.

The true infant mortality rates for the illegitimate group as a whole were probably higher than the rates which may be computed from all known infant deaths, whether scheduled or unscheduled, and the total (955) live births, since among the 256 cases which could not be traced and whose condition at 1 year of age was unknown some deaths under one year doubtless occurred. The rate of 294.2, based upon the total illegitimate births and the known infant deaths, is therefore an understatement of the true rate. The scheduled group, however, including those infants who could be located and traced to the end of the year, or, in other words, including roughly the group of infants whose mothers remained in Baltimore at or near the places from which births were registered, showed a rate of 300.7, slightly higher than the rate based on the total births. It can not be assumed, however, that this rate indicates the true rate for all illegitimate infants. In any case it is clear that the illegitimate infants had a mortality markedly higher than the legitimate infants.

White and colored infants.

The live-born colored illegitimate infants (581 in number) had a mortality rate of 280.6, based upon births and known infant deaths per 1,000 births. The live-born white infants (374 in number) had a mortality rate of 315.5 on the same basis.¹⁷ In the scheduled group of illegitimate infants, the rate among the colored babies was 293.4 per 1,000 and among the white babies 319 per 1,000. It will be noted, therefore, that among the colored births the mortality of illegitimate infants approached twice the mortality (158.6 per 1,000) of legitimate infants, while among the white births the mortality of illegitimate infants was more than three times as great as the mortality (95.9 per 1,000) among legitimate infants. This greater excess in mortality among the white illegitimate births accompanied an odd reversal in rates: In the legitimate groups the colored babies had a markedly higher mortality than the white babies; in the illegitimate groups the white babies had a slightly higher mortality than the colored babies. Among both white and colored infants, although the excess hazard to illegitimate babies can not be measured exactly, the fact of an excess hazard is clearly established.¹⁸

¹⁶ The unscheduled illegitimate infants include 256 live-born infants whose condition at the end of the year is not known, 18 live-born infants who are known to have survived the year, and 109 live-born infants who are known to have died.

¹⁷ The degree of uncertainty as to the mortality among illegitimate white infants was much greater than that among illegitimate colored infants; in the white group, the condition at one year after birth, whether alive or dead, of 133, or 36 per cent, was unknown; in the colored group the condition of 123, or 21 per cent of the total colored, was unknown.

¹⁸ See Table 212, Appendix VII, p. 384.

TABLE VII.—*Infant mortality rates, by legitimacy of births and color of mother, in births in 1915.*

Color of mother.	Infant mortality rate.		
	Legitimate infants.	Illegitimate infants.	
		Total.	Schedul'd.
Total.....	103.5	294.2	287
White.....	95.9	315.5	313
Colored.....	158.6	280.6	284

Age at death and stated cause of death.

At all ages under 1 year and among the deaths from all stated causes an excess mortality among the illegitimate infants persisted. The excess was greatest, however, in both white and colored groups, in the deaths during the second and third months. This may reflect a genuine peak in the excess hazard or it may reflect a grouping in the later months of infant deaths among the 256 illegitimate infants whose condition at 1 year is not known.¹⁹ The one stated cause of death which showed an excess in mortality above the average excess for all causes was syphilis. But, again, this fact should be qualified by the reminder that less effort might be made in the case of an illegitimate infant than in the case of a legitimate infant to assign a death from syphilis to some other cause.²⁰

Employment of mother.

Employment away from home was far more prevalent among the mothers of children born out of wedlock than in the normal group, even comparing white mothers with white mothers and colored mothers with colored mothers. Apparently, also, these mothers resumed their work after the birth a little sooner than the others. With the limitations already noted as due to the different basis of computation, a rough comparison can be made of the mortality in the two groups among infants of mothers employed away from home during pregnancy; and for both the white and the colored illegitimate infants of working mothers a mortality is found definitely higher than that for legitimate infants of working mothers of the same race. Furthermore, it is to be noted that the illegitimate infants of mothers working away during pregnancy had a mortality only slightly higher than that of the other illegitimate infants.

In one point, however, the effect of employment away from home seems to appear even in the illegitimate group. Among the illegiti-

¹⁹ It may fairly be assumed that relatively few of the infants were removed from Baltimore during the first month, and, further, that such deaths as occurred among the 256 untraced infants occurred chiefly out of the city—therefore, chiefly after the first month of life.

²⁰ See Tables 213, 214, 215, and 216, Appendix VII, pp. 385 and 386.

ate births, as among the legitimate, the percentage of premature births was higher when the mother worked during pregnancy than when she did not. But, also, the percentage of premature births is higher among the mothers of children born out of wedlock not employed than among the working mothers in the legitimate group. The infant mortality rates among the full-term illegitimate live births were higher, also, than the infant mortality rates among full-term legitimate live births.²¹

erty.

The economic status of the mothers is not clear. Such amounts are reported for the mothers' earnings and for the fathers' contributions indicate a small income for the mother and suggest that the mortality rates among the illegitimate infants should be compared with the mortality rates among the legitimate infants whose fathers earned nothing or less than \$450. This comparison shows that among both white and colored infants, the illegitimate births had higher mortality rates than legitimate births of the same race in families where the father earned nothing at all or less than \$450.

TABLE VIII.—Relative mortality rates, by color, among scheduled illegitimate infants, in comparison with legitimate infants in lowest fathers' earnings groups.

Earnings of father and legitimacy of infant.	White mothers.		Colored mothers.	
	Live births.	Infant mortality rate.	Live births.	Infant mortality rate.
illegitimate births—Earnings of father:				
Under \$450.....	1,037	153.3	507	163.7
No earnings.....	138	210.1	69	202.8
legitimate births.....	374	315.5	581	280.6

conditions peculiar to illegitimacy.

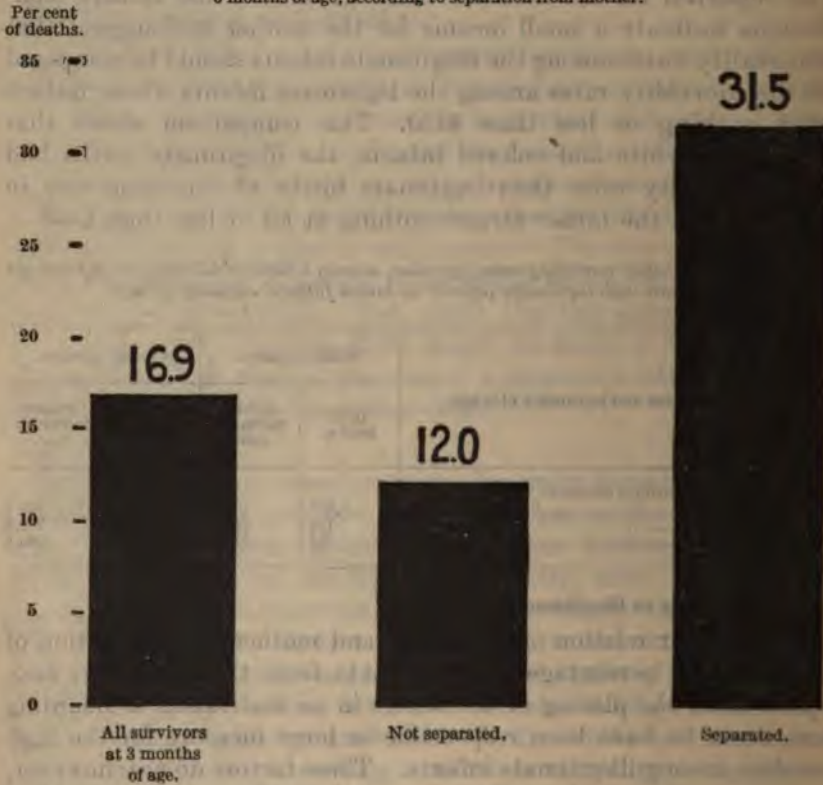
The irregular relation of the father and mother, the separation of considerable percentage of the infants from their mothers, and, particular, the placing of the babies in an institution or boarding home, seem to have been responsible in large measure for the high mortality among illegitimate infants. These factors do not, however, account for it entirely. The very slight difference in mortality between the white and the colored illegitimate infants, has already been noted and in the present discussion they will be considered together.

In the scheduled group of illegitimate children as a whole, the infant mortality rate was 300.7 per 1,000 live births. Among the 99 infants whose mothers did not live with the fathers but received something from the fathers for their support, 46 deaths occurred within the year—an infant mortality rate of 231.2 per 1,000. This

²¹ See Tables 212, 218 and 219, Appendix VII, pp. 384 and 387.

rate was definitely lower than the rate (309.9 per 1,000) among the 242 infants whose mothers did not live with the fathers and received nothing from them, and lower than the rate (347.8 per 1,000) among the 92 infants whose mothers and fathers lived together during the whole or the greater part of the year following the birth. However, 19 deaths occurred among the 39 infants for whom the relation of the mother and father was not reported and a true distribution of these deaths among the other groups might shift the relation of the mortality rates.²²

CHART XXII.—Per cent of deaths before end of first year of life among illegitimate infants surviving at 3 months of age, according to separation from mother.



The infants separated from their mothers had a mortality from two to three times as high as the infants who stayed with their mothers. Of the survivors at 3 months of age 17 per cent died before the end of the year—12 per cent in the group who stayed with their mothers, and 32 per cent in the group who were separated from their mothers. Again, of the survivors at 6 months of age, 11 per cent died before the end of the year—8 per cent in the group who stayed with their mothers

²² See Table 221, Appendix VII, p. 388.

and 24 per cent in the group who were separated from their mothers. A similar difference appears if the colored infants are considered by themselves.²³ It may be questioned whether the scheduled group indicates fairly the part played by the separation of the infant from his mother in the total mortality among all illegitimate infants, since the percentage of infants away from their mothers may have been higher among those who could not be traced than among those for whom it was possible to secure detailed information. But the rates which have been noted show that even in the scheduled group separation of the infant from the mother more than doubled the death rate among survivors of the first three months. At the same time, the death rates were higher even among the infants who stayed with their mothers than among legitimate infants, either white or colored, at the same ages.

As to the hazard of institutional life for infants, there were two indications of excessive mortality. In the entire group of 955 illegitimate live births, there were 56 which occurred in an institution, including 2 infants born in jail. Of these 56 infants, 35 are known to have died, while 9 could not be traced and their condition at the end of the year was not known. Assuming that these known deaths are all that occurred, the infant mortality rate was 625 per 1,000 for these 56 infants born in institutions. In the scheduled group of 572 illegitimate live births were 10 live births in institutions. Two of these 10 infants died within two weeks after birth.²⁴

Again, it is possible to compare the percentage of deaths among infants who were at some time during the first year of life in an institution or boarding home, and among those who were at no time inmates of an institution or boarding. The actual numbers in the several groups are small and the differences in rates are inconclusive, but they seem to indicate that the hazard to infants in an institution or a boarding home was excessive—in both cases about 3 babies in 8 died. The 30 infants boarding in private homes did not, on the other hand, show a mortality above that for illegitimate infants who were never an inmate of an institution or boarded. In the colored group the mortality among infants boarded in private homes seems to have been even a trifle lower than that in the large group who were never boarded or placed in an institution. But even when all the babies in institutions and boarding homes were eliminated, the other

²³ See Table 222, Appendix VII, p. 399. *No comparison of mortality among infants under 3 months of age is possible without analysis by the age at which the infant was separated from the mother. The high percentage of total deaths in the age period between 2 weeks and 3 months among infants "with mother" and the low percentage of total deaths in the age period between 2 weeks and 3 months among infants "separated from mother" suggest that the separations occurred mainly in the later months, and after the first month at least.*

²⁴ See Table 223, Appendix VII, p. 399.

illegitimate babies still showed a relatively high mortality in comparison with legitimate infants, white or colored.²⁵

Among the infants who were not separated from their mother, the dwelling was shifted in many cases. Of the 528 illegitimate infants who survived at least two weeks, approximately half (262) was removed at least once from one dwelling to another. These removals can not be related, in the tabulation of so small a total group, to other circumstances, but it may be noted that the percentage of subsequent deaths was higher among the babies who were moved about than among the babies who were not subjected to removals.²⁶

Infant feeding.

With the prevalence of employment among the mothers of children born out of wedlock and with the considerable minority who did not keep their babies with them, it is not surprising to find a high percentage of the illegitimate infants artificially fed during the early months. In the legitimate group, the number of babies having breast milk and no other food was 88 per cent of all in the first month and 72 per cent of all in the third month. In the illegitimate group, 79 per cent were breast fed in the first month, but only 44 per cent in the third month. By the ninth month, the number breast fed in the illegitimate group had dropped to 12 per cent of all, as against 29 per cent in the legitimate group. These low percentages breast fed were balanced by high percentages artificially fed. Mixed feeding, on the other hand, was rather more prevalent in the illegitimate group than in the other during the early months but less prevalent in the illegitimate group than in the other after the sixth month.

The difference in types of feeding reported for the illegitimate group and the legitimate group was especially marked among the white babies, but it was present also among the colored babies. And in the illegitimate group, as to a less degree in the legitimate group, more mixed feeding and less artificial feeding was found among the colored infants than among the white infants.

The white illegitimate infants having each specified type of feeding showed higher computed rates per 1,000 infants fed than white legitimate infants having the same type of feeding. The excess in rates persisted even in a comparison of the rates for white illegitimate infants with the rates for white legitimate infants in the lowest earnings groups. It was most marked among infants artificially fed. The colored illegitimate infants, on the other hand, showed a clear excess in the computed rate per 1,000 infants fed only in the comparison of breast-fed infants.

²⁵ See Table 224, Appendix VII, p. 390.

²⁶ See Table 223, Appendix VII, p. 390.

Again, comparing the computed rates among white and colored illegitimate infants having each specified type of feeding, it appears that the breast-fed colored illegitimate infants had a mortality twice as high as the breast-fed white illegitimate infants, while the artificially-fed colored illegitimate infants had a mortality slightly lower than the artificially-fed white illegitimate infants.

With regard to deaths immediately after birth of infants not fed at all, the most marked excess was among colored illegitimate births.²⁷

The total mortality among illegitimate births, therefore, which was slightly higher in the white group than in the colored group, reflects in the white group an especially high percentage of infants artificially fed, and a marked excess in mortality among these infants, together with a slighter excess in mortality (as compared with white legitimate infants) among infants breast fed or mixed fed and among infants dying immediately after birth without being fed at all. In the colored group, the high mortality among illegitimate infants reflects also a high percentage of infants artificially fed, a high percentage mixed fed during the early months, and a marked excess in mortality among infants breast fed and among infants dying immediately after birth without being fed at all.

STILLBIRTHS AND MISCARRIAGES.

The stillbirth and miscarriage rates among the illegitimate births were higher than among the legitimate births, even in a comparison of white births with white births and colored births with colored births. Again, eliminating from both groups the mothers who were not gainfully employed away from home during pregnancy or whose employment was not reported, there were found in both the white and the colored groups higher stillbirth rates among the illegitimate births than among the legitimate births. The white illegitimate births (but not the colored illegitimate births) showed also a high miscarriage rate.²⁸

It will be remembered that in the normal group mothers under 20 years of age had a higher stillbirth rate than the older mothers. In the white illegitimate group this difference disappeared, and mothers of all ages had higher stillbirth rates than the mothers in the normal group. In the colored illegitimate group, the stillbirth rate was higher among the mothers 20 years of age and older than among the mothers under 20, and only these older mothers had a stillbirth rate higher than the stillbirth rate among colored mothers in the normal group.

²⁷ See Tables 226 and 227, Appendix VII, p. 391.

²⁸ See Table 212, Appendix VII, p. 384.

TABLE IX.—*Miscarriage and stillbirth rates, by legitimacy, color, and age of mothers in 1915.*

Age and color of mother.	Legitimate.		Illegitimate.	
	Miscarriages per 100 births. ¹	Stillbirths per 100 births.	Miscarriages per 100 births. ¹	Stillbirths per 100 births.
White mothers:				
Under 20 years.....	2.8	2.4	4.7	
20 years and over.....	3.3	2.8	6.3	
Colored mothers:				
Under 20 years.....	4.0	11.0	3.9	
20 years and over.....	6.1	7.7	6.7	

¹ Includes miscarriages.

The high percentage of premature births in the illegitimate group has already been noted. Comparing full-term births with full-term births, however, there was still a higher stillbirth rate in the illegitimate group than in the legitimate group, except among the 96 term births to mothers of children born out of wedlock not gainfully employed during pregnancy. This rate (2.1 per 100 births) is practically identical with the rate (2 per 100 births) among full-term legitimate births to mothers not gainfully employed away from home during pregnancy.²⁹

²⁹ See Table 219, Appendix VII, p. 387.

GENERAL SUMMARY.

The total infant mortality rate in the group of 10,797 live births to married mothers, studied in detail in Baltimore, was 103.5 per 1,000. The deaths from causes peculiar to early infancy were 37.7 per 1,000 live births, the deaths from gastric and intestinal diseases were 29.1 per 1,000 live births, and the deaths from respiratory and other communicable diseases were 26.4 per 1,000 live births. Malformations were the stated cause of 39 deaths, or 3.6 per 1,000 live births. External causes, diseases unknown or not specified, and scattering deaths assigned to unusual causes were responsible for a mortality of 6.7 per 1,000 live births.

Of the total number of 1,117 deaths, 42.7 per cent occurred within the first month after birth and 27.1 per cent after the sixth month.

The mortality in the entire group was approximately the same as the mortality in the cities of the United States birth registration area in 1915 and 1916. An analysis of the conditions under which babies lived and died in Baltimore may fairly be considered an analysis of conditions in a typical American city.

Mortality rates markedly above the average for the entire group occurred among the colored families, the foreign-born Polish families, and the very poor native white families.

Low mortality rates—approximating those in New Zealand—were found among the babies of foreign-born Jewish mothers and in families of the highest earnings groups.

Breast-fed babies in every group of the population had lower mortality than artificially-fed babies in the same group. Computed mortality rates derived from the monthly death rates among babies having the specified types of feeding month by month were 43.3 per 1,000 infants breast fed and 191.4 per 1,000 infants having only artificial food. The earlier the babies were weaned the greater was the excess in mortality among those artificially fed. For example, among infants surviving at the beginning of the third month of life the percentage of subsequent deaths during the year was 18.7 in the group artificially fed from the first month, 12.4 in the group artificially fed from the second month, and 10.6 in the group whose artificial feeding began in the third month. The rates for breast-fed babies and the rates for artificially-fed babies varied greatly with the color and nationality of the mother and the earnings of the father ranging from 91.4 per 1,000 infants breast fed and 387.9 per 1,000 infants artificially fed in the poorest colored families to 13.3 per 1,000 infants breast fed and 27.3 per 1,000 infants artificially fed in the most prosperous families (mainly native white).

In every group certain measurable conditions accompanied a mortality above the average for the group: Poverty, employment of mothers away from home during pregnancy or the early months of an infant's life, housing below standard in point of sanitary equipment and room congestion, short intervals between births, and the bearing of many children. On the other hand, certain mothers whose infants were exposed to such unfavorable conditions were being reached by the organizations carrying on prenatal and post-natal work.

New evidence is afforded by the Baltimore study that poverty is an important factor in infant mortality. Among the 1,544 babies whose fathers earned less than \$450 the infant mortality rate was 156.7 per 1,000 live births; among the 431 babies whose fathers earned \$1,850 or more the infant mortality rate was 37.1 per 1,000 live births. Eliminating differences in color and nationality and considering only the babies born to native-white mothers a similar decrease in mortality appears as the fathers' earnings rise: In the poorest families about 1 baby in 6 died within the year, in the most prosperous families about 1 baby in 26 died within the year. Further, eliminating certain measurable conditions that occur more frequently in very poor homes than elsewhere and considering only babies born to native white mothers who were literate, who were not employed during pregnancy or the year after the birth, who had borne fewer than seven children previous to the birth in 1915, and who reported an interval of two years or longer since the previous birth if the 1915 baby was not a first-born child, a marked difference in mortality in the poorest homes and in the most prosperous persists. Even in this favored group the infant mortality rate in the poor homes was more than twice as high as the infant mortality rate in the most prosperous homes.

Employment of the mother away from home during pregnancy accompanied, in each color and nativity group, a percentage of premature births above the average for the group and excessive mortality among full-term births from the causes peculiar to early infancy. The mortality from other causes was also higher among the babies whose mothers worked away from home during pregnancy than the mortality that would be expected when allowance is made for the poverty of these families and the large number of colored families and Polish families among them. For the infants whose mothers were employed away during the earliest months after the birth the hazard was markedly increased. Not only did they face the hazard that would naturally occur in a group with so large a percentage of infants weaned during the early months, but also a still greater hazard directly related, apparently, to the fact and circumstances of the mothers' employment away from home. However, the actual effect on the total mortality of mothers' employment

away during the first year after a birth was slight, since the number of mothers employed away after the birth was smaller than the number employed away during pregnancy, and employment was usually resumed after the first month or even later in the year, when the period of highest mortality had been already passed.

Room congestion and lack of sanitary equipment in the dwelling accompanied death rates among infants surviving the first two weeks higher than the death rates in groups of similar color and nationality and corresponding fathers' earnings in dwellings of a better type. Of the 5,544 infants in dwellings with less than one person per room, 4.9 per cent died during the year; of the 4,269 infants in dwellings with one person but less than two persons per room, 8.4 per cent died during the year; of the 498 infants in dwellings with two or more persons per room, 11.6 per cent died during the year. Again, of the 4,486 infants in dwellings with sewer connection, a bath tub, and a toilet for the exclusive use of the family, 4.4 per cent died during the year; but of the 5,850 infants in dwellings lacking one or more of these three items, 8.5 per cent died during the year. In this latter comparison the deaths from gastric and intestinal diseases are noted separately and these show a greater difference than the deaths from other causes. Variations in death rate in relation to housing persist when the greater poverty of the group in the poorer dwellings is considered.

The first-born infants had a mortality slightly higher than the mortality of infants second or third in order of birth, but among the later orders of birth the mortality (especially from causes other than the diseases of early infancy) rose steadily. The first-born infants showed a higher percentage of premature births than any others except the infants twelfth or later in order of birth. Having come to birth, whether at full term or prematurely, the first-born babies had a markedly lower mortality than other babies of the corresponding term, with differences in rates between the first born and the others far greater than the average difference between first born and all others when full-term births and premature births are grouped together.

The infants of mothers under 20 years of age and of mothers 35 years old or older showed higher mortality rates than other infants. Among the infants of the youngest mothers the high mortality appears in deaths from causes peculiar to early infancy and (when infants were second or third in order of birth) in deaths from other causes. Among the infants of the oldest mothers the high mortality appears mainly in deaths from "all other causes," but the first-born infants of the oldest mothers had also an excessive mortality from causes peculiar to early infancy.

Variations in mortality according to the infant's order of birth and the mother's age were accentuated when the interval since a pre-

ceding birth was short. Throughout, the births following a preceding birth by an interval of less than two years had a higher mortality than births occurring after a longer interval.

The infants born to the 105 mothers who died within the year after confinement had the highest mortality in the entire group, with a rate of 486.1 per 1,000 live births as compared with the mortality of 100.9 per 1,000 among the infants whose mothers survived. When the mother died from a cause directly related to childbirth or from some other stated cause within two months after her confinement, the infant mortality from all causes rose to 625 per 1,000. The excess mortality was somewhat greater from early infancy than from other causes.

Among the negroes all the unfavorable social factors were present. Their poverty was greater than the poverty in any other group in Baltimore (except the small group of Lithuanian families); 44.9 per cent of the mothers were gainfully employed away from home during pregnancy; room congestion was less prevalent than among the foreign-born white families, but the number of dwellings without standard equipment was relatively high; one-fifth of the negro infants were seventh or later in order of birth and 33.5 per cent had followed the preceding birth by an interval of less than two years. But more of the negro mothers than of any others were reached by the prenatal and postnatal work. As the net result of these factors—and others not touched upon in such a study as the present one—the negro babies had a high mortality from early infancy (49.8 per 1,000), a high mortality from respiratory and other communicable diseases (65.9 per 1,000), and an average mortality (30.7 per 1,000) from gastric and intestinal diseases.

In the Polish group, also, all the unfavorable factors were present. Their room congestion was the greatest in Baltimore; the percentage of mothers gainfully employed away from home during pregnancy was almost as high as the corresponding percentage in the negro families; and the influence of unfavorable factors was not counterbalanced by infant-welfare work, since the prenatal and postnatal agencies had reached but few of the Polish mothers. The Polish mortality was especially high from gastric and intestinal diseases (68.8 per 1,000) and above the average from early infancy (43.2 per 1,000).

The very poor native white mothers were less generally employed away from home than the Polish or Negro mothers; their housing was poor in sanitary equipment but they lived in less congested dwellings than the Poles; in interval between births and the bearing of many children conditions were more favorable than among the negroes. Infant-welfare work had reached more of the very poor native white mothers than of the Polish mothers, but fewer in this native white

group than in the colored group. In the poorest native white families the mortality from early infancy was higher than in the Negro or Polish families; and the mortality from gastric and intestinal diseases was markedly above the average though less high than in the Polish group.

The foreign-born Jewish families were poorer than the native white families but less poor than the Negroes and the Poles. Practically none of the mothers were employed away from home. Many of them had borne large families but the percentage of mothers pregnant again within 12 months after the birth in 1915 was smaller than in any other color or nationality group. Room congestion was less prevalent than among the Poles but more prevalent than among the native white families. In sanitary equipment, too, the dwellings of the Jewish families were better than the dwellings of the Poles and the Italians. And more of the Jewish mothers than of any others except the Negroes were reached by the prenatal and post-natal work. From these and other factors not touched in the present study, the babies in the foreign-born Jewish families had a low mortality from early infancy (22.9 per 1,000), a low mortality from respiratory and other communicable diseases (15.6 per 1,000), and a markedly low mortality from gastric and intestinal diseases (9.4 per 1,000).

In the illegitimate group of 955 live births, 281 infant deaths are known to have occurred, but the condition of 256 infants at 12 months after birth could not be learned. The known infant mortality rate of 294.2 per 1,000 live births is therefore a minimum statement of the hazard to the illegitimate infants born in Baltimore during 1915. More than two-thirds of the illegitimate births were to colored mothers, and the mortality in the illegitimate colored group was less high than in the illegitimate white group. The excess in mortality among illegitimate infants appears especially in deaths from early infancy, from gastric and intestinal diseases, and from syphilis. For 572 live-born illegitimate infants detailed information was secured which revealed a high percentage of infants artificially fed during the early months. In the colored group the excess mortality among illegitimate infants seems to be largely accounted for by the prevalence of artificial feeding. But the deaths in the white group were more numerous than the deaths which would have occurred if they had been subject only to the hazard of babies born to married mothers and having the same type of feeding. The chief conditions indicated in such a study as the present one which seemed to increase the hazard to illegitimate infants were the prevalence of care in institutions or boarding homes, the frequent shifts in dwelling place, and the generally low economic level of the mothers.

APPENDIXES

APPENDIXES

APPENDIX I.—BIRTH REGISTRATION IN BALTIMORE.

As a preliminary to each of the bureau's field studies of infant mortality in cities a fairly complete record of births during a given period has been secured. In 1915, when the plans were made for the present study, Maryland had not been admitted to the birth-registration area, for which a 90 per cent registration is required by the United States Bureau of the Census. But a steadily increasing annual birth rate (the registered live births rising from 16.9 per 1,000 population in 1908 to 23.3 per 1,000 population in 1915) indicated that registration of births in Baltimore had improved year by year. During the same period the infant mortality rate had dropped from 241.3 per 1,000 registered live births to 119.8 per 1,000 registered live births, a decrease so marked that, in spite of a reduction in the number of infant deaths, a more nearly complete registration of births is also clearly indicated. In 1916 Maryland was added to the birth-registration area.

The registration law in Maryland in effect at the time of this study was enacted in 1912 and slightly amended in 1914.¹ Under this law stillbirths were registered as births and as deaths. "The record of a birth shall state the date and place of its occurrence, name in full, sex and color, and the number of the child, whether living or stillborn, whether a twin, triplet, or other plural birth, and the name, color, occupation, birthplace, and residence of parents."² The physician or midwife was required to register a birth within four days.

TABLE I.—*Estimated population, birth rate, and infant mortality rate, shown by registered births and deaths, under 1 year of age in Baltimore City, 1908-1917.*¹

Year.	Estimated population, July 1.	Birth rate.	Registered live births.	Registered deaths under 1 year.	Infant mortality rate.
1908.....	549,499	16.7	9,178	2,215	241.3
1909.....	554,514	15.8	8,796	2,227	253.2
1910.....	559,530	17.6	9,858	2,148	217.9
1911.....	564,545	16.4	9,283	1,958	209.8
1912.....	569,560	20.0	11,398	2,026	177.8
1913.....	574,575	21.8	12,542	2,002	159.6
1914.....	579,590	22.0	12,637	1,954	154.6
1915.....	584,605	23.3	13,634	1,633	119.8
1916.....	589,621	25.6	15,085	1,783	118.2
1917.....	594,637	25.1	14,950	1,783	119.3

¹ Estimated population computed from figures for censuses of 1900 and 1910. Figures for births and deaths based on annual reports of Baltimore City Department of Public Safety, subdepartment of health, 1908-1917.

TABLE II.—*Stillbirths in Baltimore City, 1908-1917.*^a

Year.	Total births. ^b	Stillbirths. ^b	Stillbirths ^b per 1,000 births.	Year.	Total births. ^b	Stillbirths. ^b	Stillbirths ^b per 1,000 births.
1908.....	9,989	811	81.2	1913.....	13,451	909	67.6
1909.....	9,613	817	85.0	1914.....	13,663	1,026	75.1
1910.....	10,680	822	77.0	1915.....	14,765	1,131	76.6
1911.....	9,995	712	71.2	1916.....	16,320	1,235	75.7
1912.....	12,087	689	56.5	1917.....	16,217	1,267	78.1

^a Derived from annual reports of Baltimore City Department of Public Safety, subdepartment of health, 1908-1917.

^b Includes all registered dead births, both stillbirths and miscarriages.

¹ 1912 C 696; 1914 C 747. The law was further amended in 1916 and 1920 (1916 C 691 and 1920 C 317), but the provisions here referred to were not changed.

² 1912 C 696, amending Annotated Code, art. 43, sec. 9.

During 1915 the Baltimore City Department of Public Safety, subdepartment of health, was making a special effort to secure the rigid enforcement of the birth-registration law. Among the devices the health officials were using to trace unregistered births was the checking of infants' death certificates with the birth records. When it was found that a birth had not been registered, the health warden of the district from which the death was reported called upon the parents of the child and learned who had attended the birth. If the birth had occurred within the city, a complete record was secured from the attendant or, in cases where neither physician nor midwife had been employed, from the parents of the child.

In September, 1915, the Babies' Milk Fund Association of Baltimore furnished the Children's Bureau with the names of 813 babies born in Baltimore City since January 1 of that year, and these names the agents of the bureau checked with the birth records. Most of the mothers in this group were native white, negroes, or foreign-born Jews, and they included 125 negro mothers of illegitimate babies. All of the births had been attended by physicians. Of the entire number, 724, or 89.1 per cent, had been registered. The Children's Bureau followed this test by a canvass of certain districts in order to determine whether unregistered births were fairly well distributed throughout the city or confined to particular groups of the population. The districts were selected for the canvass after consultation with various persons in Baltimore and they included eight neighborhoods especially representing native white, Negroes, and six foreign nationalities—Jewish, Polish, Italian, German, Bohemian, and Lithuanian. Registration was found to be poorest among the Poles and best among the Jews. Of the 555 births found in the canvass, 77 per cent were registered. The low percentage of registered births in this group is not accounted for by the large number of cases attended by midwives, for a larger percentage of the midwives' cases than of the physicians' cases had been registered.

TABLE III.—Registration of birth, by color and nationality of mother; births studied in special canvass.

Color and nationality of mother.	Births studied in special canvass.		
	Total.	Registered.	
		Number.	Per cent. ¹
Total.....	555	425	76.7
Native white.....	180	148	82.2
Foreign-born white:			
Polish.....	93	59	63.4
Jewish.....	73	62	84.9
Italian.....	42	32	.....
Lithuanian.....	26	19	.....
Bohemian.....	15	12	.....
German.....	12	8	.....
Other.....	11	8	.....
Colored.....	98	72	73.5
Not reported.....	5	5	.....

¹ Not shown where base is less than 50.

TABLE IV.—Registration of birth, by attendant at birth; births studied in special canvass.

Attendant at birth.	Births studied in special canvass.		
	Total.	Registered.	
		Number.	Per cent. ¹
Total.....	555	425	76.6
Physician.....	301	237	78.7
Midwife.....	224	179	79.9
Both.....	11	7	.....
Neither.....	7	2	.....
Not reported.....	12	.....	.....

¹ Not shown where base is less than 50.

The Babies' Milk Fund Association and other organizations in Baltimore began during 1915 to cooperate with the city health department in securing the registration of unregistered births.

In February, 1916, the Children's Bureau agents interviewed the families of babies born in January, 1915; the following month each ward was visited again for interviews with the families of babies born in February, 1915, and so on through the year. Whenever the bureau's agents learned of an unregistered baby who had been born in 1915, the name and address were reported to the health department and the baby was included in the study.

How nearly complete was the final record of births during 1915, when the names secured in the course of the field study had been added to the registered births, it is not possible to estimate. It is probable, at least, that the numbers of births of the several color and nationality groups traced in this way tended to diminish the differences in the extent to which the known births fell short of the total number in the several groups. Even if the final record remained (as the preliminary canvass indicated the original records to be) between 80 and 90 per cent complete for the foreign-born Jewish infants and between 60 and 70 per cent complete for the Polish infants, correction of this difference would diminish but would not obliterate the difference in mortality rate apparent in these two groups. In the same way, if it is contended that the poorest babies were least likely to be registered and that part of the apparent excess mortality rate in the poorest families is accounted for by defective registration, it should also be remembered that unregistered births were far more easily traced in the poorest districts than among the well-to-do. It has also been noted that midwives' cases showed a slightly higher percentage of registered births than physicians' cases, so the hypothesis that more poor babies than others escaped registration may itself be questioned.

In general, it may be concluded that in so far as the record of births is incomplete, the infant mortality rates derived in the present study overstate the absolute hazard, but that the relative hazards of the various groups lie in the direction indicated by the figures shown.

The following is a list of the names of the persons who have been admitted to the membership of the Society since the meeting of the Council on the 15th of May, 1885. The names are given in the order in which they were admitted, and are followed by the date of admission. The names are given in the order in which they were admitted, and are followed by the date of admission.

APPENDIX II.—THE BABIES IN FAMILIES WHICH COULD NOT BE STUDIED.

Fourteen per cent of the legitimate births registered as occurring in Baltimore during the year 1915 are not included in the detailed study. The number excluded (1,871) was made up of three main groups: One thousand four hundred and sixty-six whose families could not be located in Baltimore or were known to have moved away; 381 nonresidents (320 nonresident hospital cases and 61 cases where the family was living in Baltimore but had been absent from the city more than four months during the first year after the baby's birth); and 24 births whose families were located but about whom information was not available. It was desired to relate the conditions under which the babies lived and died to the city of Baltimore, and hence infants of nonresident mothers, infants whose families were away from the city for over four months, and infants whose families had moved away were excluded. Moreover, it would have been difficult to secure exact information as to age at leaving; and even if exact information could have been obtained about the ages of infants when they left the city, or returned, the separating of the time spent in the city and the time spent elsewhere and fair computation of the rates among these infants during the months spent in Baltimore would have involved minute computations of doubtful value. In this study, as in the earlier studies of the bureau, the nonresidents are therefore omitted from the detailed study.

Whether in the families omitted from the detailed study conditions were markedly different from those we have been analyzing is a question to which the data afford no satisfactory answer.

For the unknown number of babies whose births were never registered no information is available. For the other group of 1,871 babies whose births were registered but who could not be included in the detailed study the birth certificates give us certain items. They state the father's occupation, and the race, nativity, and age of both parents, as given by the physician or midwife who reported the birth. The data about the father's occupation are of uncertain value, but these statements and the statements about the mother's color and nativity have been tabulated and analyzed. The 320 nonresident hospital cases are not included in this analysis, since they do not represent a part of the Baltimore population. It may be noted in passing that the birth certificates indicate them to be a selected group with a higher percentage of well-to-do native white mothers than the other births registered in Baltimore during the year. The following paragraphs, therefore, refer to the 1,551 births to Baltimore mothers who could not be located or who were known to have moved away or who had been absent from the city more than four months during the year.

TABLE I.—*Color and nativity of mother, by class of exclusion; legitimate births¹ in 1915.*

Color and nativity of mother.	Legitimate births. ¹							
	Included in study.		Excluded from study.					
			Total.		Nonresident hospital cases.		All other exclusions.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	11,613	100.0	1,871	100.0	320	100.0	1,551	100.0
Native white.....	7,210	62.1	1,143	61.1	243	75.9	900	58.6
Foreign-born white.....	2,894	24.9	378	20.2	27	8.4	351	22.6
Colored.....	1,509	13.0	342	18.3	47	14.7	296	19.0
Not reported.....			8	0.4	3	0.9	5	0.3

¹ Includes miscarriages.

More than one in six of the mothers were colored, as against one in eight in the families studied in detail. Eight per cent of the fathers were reported in occupations with median earnings of \$1,050 or more, a percentage approximately the same as that in the detailed study. In each race and nativity group the percentage of mothers delivered in a hospital was higher than in the detailed study, and except among the foreign born the percentage attended by a physician not at a hospital was lower than in the detailed study. This suggests a slightly lower economic level in the excluded group.

TABLE II.—*Prevalence of attendance at confinement by physician, by place of confinement and color of mother; births¹ to mothers in 1915.²*

Color and nativity of mother.	Per cent of mothers ¹ attended by a physician.			
	In hospital.		Outside hospital.	
	Detailed study.	Excluded legitimate births. ³	Detailed study.	Excluded legitimate births.
Total.....	9.5	20.0	57.9	55.8
Native white.....	8.1	21.3	64.4	58.7
Foreign-born white.....	10.9	13.1	40.4	45.9
Colored.....	13.5	24.1	60.4	58.6

¹ Includes miscarriages.

² Detailed study figures are based on mothers; excluded legitimate figures are based on issues.

³ Except nonresident hospital cases.

If the economic status and general character of the white families, native and foreign, and of the colored families were the same in this excluded group as in the included group, one would still expect to find among the excluded families slightly greater losses than in the included group, because of the larger percentage of colored families. What are the facts?

Of the total infant mortality under 1 year in this group there is no direct measure, as deaths doubtless occurred outside the city for which there is no information available. But it may reasonably be

supposed that few families moved away within two weeks after the baby's birth and that the known death rate among babies under two weeks of age is approximately correct.

TABLE III.—*Infant mortality and stillbirth rates, by color and nativity of mothers, excluded legitimate births¹ other than nonresident hospital cases.*

Color and nativity of mother.	Excluded legitimate births ¹ other than nonresident hospital cases.								
	Total births. ²	Miscarriages.	Total births.	Stillbirths.		Live births.	Known infant deaths.		
				Number.	Per 1,000 births. ³		Under 2 weeks.	2 weeks and over.	Age not reported.
Total.....	1,551	45	1,506	70	46.4	1,436	57	73	1
Native white.....	900	28	872	27	31.0	845	28	33	.....
Foreign-born white.....	351	5	346	14	40.5	332	13	15	1
Colored.....	295	11	284	28	98.6	256	16	25	.....
Not reported.....	5	1	4	1	.....	3	.....	.....	.....

¹ Includes miscarriages.

² Not shown where base is less than 100.

Of the 1,551 births, 1,436 were live births, and among these live-born babies 57 died in the first two weeks, a death rate of 39.7 per 1,000. This rate can be compared with an expected death rate computed from the rates for each race and nativity in the detailed study. Thus, in the detailed study, the death rate under 2 weeks of age was 35.8 among babies of native white mothers, 33.8 among babies of foreign-born white mothers, and 50.6 among babies of colored mothers. In the excluded group, if these same rates applied, one would expect to find 30 deaths among the 845 babies of native white mothers, 11 deaths among the 332 babies of foreign-born white mothers, and 13 deaths among the 256 colored babies, or a total of 54 deaths under 2 weeks of age and a total rate of 37.6 per 1,000. Actually, there were 57 deaths and a rate of 39.1 per 1,000, a difference too slight to have significance.

On the other hand, the stillbirth rates in the excluded group were higher for mothers of each race and nativity than in the detailed study. Comparing in the same way the expected rate and the actual rate in the two groups, it appears that there were 70 stillbirths instead of 58 expected, and a rate of 46.5 per 1,000 births instead of 38.1.

TABLE IV.—*Excess prevalence of stillbirths among excluded over rates prevailing among included legitimate births.*

Color and nativity of mother.	Excluded legitimate births other than nonresident hospital cases.		
	Total births.	Stillbirths.	
		Actual.	Expected. ¹
Total.....	1,506	70	58
Native white.....	872	27	25
Foreign-born white.....	346	14	19
Colored.....	284	28	28
Not reported.....	4	1	.....

¹ Expected on the basis of stillbirth rates prevailing in corresponding color and nativity groups in the detailed study.

Another basis of comparison, less exact but still of interest, is found in the causes of death during the first month. The record of deaths during the third and fourth weeks of age in the excluded group is probably incomplete, but when it shows an excessive death rate from any group of causes, the incompleteness of the record serves as a reminder that this excessive death rate errs, if at all, merely in being an understatement of the facts. In the excluded group, 11 deaths in the first month were assigned to communicable diseases other than the respiratory diseases, with a death rate from such causes alone of 7.7 per 1,000 live births as compared with a rate of 1.2 from similar causes in the detailed study. Syphilis was the given cause of death for 8 of these 11 babies; in the detailed study, dealing with more than seven times as many babies, only 13 deaths during the first month were assigned to communicable diseases and 10 of these to syphilis. The numbers of deaths in both groups are too small to permit any definite conclusions, but they seem to indicate in the excluded group a slightly larger proportion of families in which babies were not protected from disease.

TABLE V.—*Mortality during the first month of life, by cause of death and inclusion in or exclusion from study; live births in 1915.*

Cause of death.	Deaths during the first month—							
	Among 10,797 live-born infants included in study.				Among the 1,436 live-born infants not included in study. ¹			
	Total.		Under 2 weeks of age.	2 weeks, under 1 month.	Total. ²		Under 2 weeks of age.	2 weeks, under 1 month.
	Number.	Rate per 1,000 live births.			Number.	Rate per 1,000 live births.		
All causes.....	477	44.2	400	77	66	45.9	57	9
Gastric and intestinal diseases.....	17	1.6	8	9	4	2.8	4	.....
Respiratory diseases.....	37	3.4	20	17	4	2.8	2	2
Malformations.....	27	2.5	27	.....	4	2.8	4	.....
Early infancy.....	357	33.2	323	34	40	27.8	36	4
Epidemic and other communicable diseases.....	13	1.2	9	4	11	7.7	10	1
All other.....	26	2.4	13	13	3	2.1	1	2

¹ Other than nonresident hospital cases.

² Probably incomplete. Note that in study the number of deaths reported at "2 weeks, under 1 month" is 19.3 per cent of the number reported "under 2 weeks"; among excluded infants the corresponding percentage is 15.8 per cent.

Mortality during the months later than the first varied with economic status and home surroundings more markedly than the mortality related to prenatal causes and occurring within the first weeks after birth. But of these deaths from postnatal causes the record is too incomplete to warrant the computation of rates.

APPENDIX III.—INFANT MORTALITY AND STILLBIRTH RATES IN THIS STUDY AND IN BALTIMORE CITY AS A WHOLE.

A city's infant mortality rate is based on the number of live births and the number of deaths under 1 year of age registered during a calendar year. It is stated in terms of the number of deaths per 1,000 live births. In Baltimore, the number of live births registered during 1915 was 13,634 and the number of deaths under 1 year registered during 1915 was 1,633.¹

The infant mortality rates given in the Children's Bureau field studies of infant mortality are based on the number of deaths under 1 year of age among a group of babies whose births are registered as occurring in a given city during a given period, and whose individual histories have been traced until 12 months after birth or until death. These rates also are stated in terms of the number of deaths per 1,000 live births.

The present study is based on births occurring in Baltimore City during 1915. But many of these births during 1915 were not registered until 1916, and the births registered in 1915 included births of an earlier period and several cases of duplicate registration. A few births in Baltimore County had also been entered in the records for Baltimore City. Therefore the total number of live births used by the Children's Bureau as the starting point for the present study—13,477—is not the same as the number of live births registered in Baltimore during the year and serving as the basis for the city infant mortality rate.

For two divisions within the group detailed schedules were secured: Among 10,797 legitimate babies, 1,117 died under 1 year of age, or 103.5 per 1,000; among 572 illegitimate babies, 172 died, or 300.7 per 1,000. In addition there were 1,725 legitimate babies who could not be traced or for whom detailed information could not be secured or who were omitted from the study as nonresidents. It was learned, however, chiefly from the death records in Baltimore, that 153 of these babies had died; no attempt was made to learn of deaths outside Baltimore. For 383 illegitimate babies detailed schedules could not be taken, but in this group information was secured whenever possible about babies who had left Baltimore; from death records and other sources it was learned that 109 of these babies had died; 18 were known to have survived the first year; and 256 could not be traced. Estimated rates for the excluded legitimate babies and for the illegitimate babies are discussed on pages 191 and 168, respectively.

It should be noted that while no deaths occurring outside Baltimore among legitimate infants and only a partial record of deaths occurring outside Baltimore among illegitimate infants are included in the number of known deaths among the total number of live births

¹ Department of public safety, annual report, subdepartment of health, to the mayor and city council of Baltimore for the fiscal year ended Dec. 31, 1915, pp. 13, 16-19. The number of deaths under 1 year of age in Baltimore during 1915 is given by the U. S. Bureau of the Census as 1,626. (See Mortality Statistics, 1915, p. 669.)

on which the present study is based and the rate which might be computed for the entire group is to that extent defective, no corresponding incompleteness due to shifts of residence appears in the deaths included in computing the city rate. For while the city rate excludes all deaths occurring outside the city among babies born in Baltimore, it includes all deaths occurring in Baltimore among babies born elsewhere.

It is obvious that with such differences in the selection of live births and of deaths included in the city rate and in the rates computed in the present study, no precise comparison between them is possible.

TABLE I.—*Infant mortality rates, by age at death, legitimacy of birth, and whether or not the birth was scheduled; registered live births in 1915.*

Legitimacy and group.	Registered live births in 1915.	Known infant deaths.							
		Total.		Under 2 weeks.		2 weeks, under 1 month.		1 month and over.	
		Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.
Total.....	13,477	1,551	115.1	548	40.7	113	8.4	890	66.6
Legitimate:									
Scheduled.....	10,797	1,117	103.5	400	37.0	77	7.1	640	59.3
Not scheduled.....	1,725	153	88.7	70	40.6	12	7.0	71	41.2
Illegitimate.....	955	281	294.2	78	81.7	24	25.1	179	187.4
Scheduled.....	572	172	300.7	44	76.9	14	24.5	114	199.3
Not scheduled.....	383	109	284.6	34	88.8	10	26.1	65	169.7

Includes 289 nonresident hospital cases.

In comparing the data on stillbirths and miscarriages secured in this report with the data published by the city health department, two differences should be kept in mind. First, there is the difference between births registered in 1915 and births occurring in 1915 which has been noted in the preceding discussion of live births and infant mortality rates. Then, there is a difference in the use of the word "stillbirth." By the city health department all dead births of whatever term are reported as stillbirths; in the present study births of seven months or more are classified as stillbirths and earlier births are classified as miscarriages.

The only stillbirth rates that can be computed from the city health department's data would not correspond with the stillbirth rate given in the present report, but with a rate secured by combining the stillbirths and miscarriages and dividing the sum by the total births. Such a rate is roughly comparable with a rate based on the city health department's data, in spite of the difference between births registered in 1915 and registered births occurring in 1915, since the completeness or incompleteness of the data depend in both cases on the ultimate completeness of the registration. Difficulties involved in changes in residence and the tracing of families do not affect the accuracy of the stillbirth rates for the entire group in the present study.

TABLE II.—Stillbirth rates, by registration of birth and color of mother; births registered in 1915 and registered births occurring in 1915.

Registration of birth and color of mother.	Total births.	Stillbirths and miscarriages.		Total births.	Stillbirths.	
		Number.	Per 1,000 births. ¹		Number.	Per 1,000 births. ¹
Births registered in 1915 ²	14,765	1,131	76.6	.....	.....	.....
White.....	12,231	771	63.0	.....	.....	.....
Colored.....	2,534	360	142.1	.....	.....	.....
Registered births occurring in 1915.....	14,636	1,159	79.2	14,095	618	43.8
White.....	12,045	755	62.7	11,647	357	30.7
Colored.....	2,555	372	145.6	2,419	236	97.6
Color not reported.....	36	32	.....	29	25	.....

¹ Not shown where base is less than 50.

² Department of public safety, annual report, subdepartment of health, fiscal year ended Dec. 31, 1915. Baltimore, 1916.

APPENDIX IV.—METHOD BY WHICH MEDIAN EARNINGS AND MEDIAN RENTALS ARE ESTIMATED FROM DATA AVAILABLE IN THE PRESENT STUDY.

The exact median of the father's earnings is the amount earned by the father in the middle of the group or, perhaps more accurately phrased, the median is the earnings at the point in the scale where one-half of the cases fall above and one-half fall below.

Similarly, the exact median rental is such an amount that one-half of the families paid more and one-half paid less.

In the tabulations, earnings and rentals are not listed individually, but grouped. The group within which the median falls can be exactly determined; the individual median can be roughly estimated within the group. As typical of the process, which is identical for earnings and rentals, the median earnings of all the fathers studied are computed below. It will be noted that the numbers refer to births. The presence of plural births (approximately 2 per cent of all) may, however, be disregarded. The slight error involved would not affect the group median, since plural births appear with about the same frequency in all earnings and nationality groups, and would not affect the validity of the comparisons made in the report on the basis of estimated individual medians.

Total.....	Births. 11, 195
With father's earnings not reported.....	226
Total with known earnings.....	10, 969
One-half of total with known earnings.....	<u>5, 484. 5</u>
Father's earnings:	
None.....	222
Under \$450.....	1, 615
\$450 to \$549.....	1, 523
\$550 to \$649.....	1, 543
	<u>4, 903</u>
\$650 to \$849.....	2, 490
	<u>7, 393</u>

Comparison of the total earning less than \$650 and of the total earning less than \$850 with one-half of total with known earnings shows that \$650 to \$849 is the group in which the median falls. In other words, the median earnings were between \$650 and \$850.

One-half of total with known earnings.....	Births. 5, 484. 5
Total in groups lower than median group.....	4, 903
	<u>581. 5</u>

The point within the median group at which individual median probably falls is:

$$\$650 \text{ plus } \left\{ \frac{581.5}{2,490} \text{ times } \$200 = \$796. \right.$$

Assuming that within the median group the cases are distributed uniformly in respect to earnings, the median point which will divide the cases in the entire series into two equal parts, half above and half below the median, is: $\frac{581.5}{2,490}$ times \$200 above the sum, \$650, which represent the lowest earnings in the median group. This gives \$796 as the median earnings.

The general idea of the method is to ...
The method is based on the fact that ...
The results are as follows: ...

Year	Value
1910	100
1911	105
1912	110
1913	115
1914	120
1915	125
1916	130
1917	135
1918	140
1919	145
1920	150

The following table shows the ...
The data is as follows: ...

APPENDIX V.—METHOD BY WHICH INFANT MORTALITY RATE IS COMPUTED FOR INFANTS HAVING A SPECIFIED TYPE OF FEEDING; EXPLANATION OF TERMS “EXPECTED DEATHS” AND “EXPECTED RATES.”

COMPUTED RATE BY TYPE OF FEEDING.

Many of the babies who are breast fed throughout the first month are shifted to mixed feeding or to artificial feeding during the second month, and such shifts from one type of feeding to another continue throughout the year. The annual rate is computed (1) from the monthly rate for each month from the first to the ninth, based on all infants receiving a given type of feeding through more than half the month (or until death within the month) and the deaths occurring during the month within this group; and (2) from the survivors of the ninth month, who had had a stated type of feeding during that month, and the deaths occurring after the ninth month within this group.

The number of breast-fed babies dwindled from 9,283 during the first month to 2,825 during the ninth month. The number of deaths during the first nine months among babies who at the time of death were receiving breast milk and no other food was 259. These represent monthly death rates varying from 15 per 1,000 in the first month to 1.7 per 1,000 in one of the later months. After the ninth month, 23 deaths occurred among the 2,817 survivors of the ninth month who were breast fed during that month. These represent a death rate after the ninth month of 8.2 per 1,000 survivors.

By applying these rates to a hypothetical group of 1,000 babies breast fed throughout the first nine months, the known monthly death rates are translated into terms of infant deaths per 1,000 babies born alive and surviving to be fed. The rate for the first month gives the number of deaths within the first month in the hypothetical group. Subtracting these deaths from 1,000, gives the number of survivors at the beginning of the second month, which, in turn, is multiplied by the rate for the second month to give the number of deaths within the second month in the hypothetical group. These, in turn, are subtracted from the survivors at the beginning of the second month. This process is repeated for each month to the ninth. The survivors of the ninth month in the hypothetical group are then multiplied by the death rate for survivors of the ninth month who had been breast fed through that month. The sum of the 10 numbers of deaths is the number of deaths which would occur during the first 12 months of life in the hypothetical group of 1,000 breast-fed babies. And, since this number is derived from a group of 1,000, it is identical with the death rate per 1,000 among breast-fed babies.

BREAST-FED INFANTS.

Month of life.	Actual group.			Hypothetical group of 1,000 infants.		
	Infant survivors.	Deaths within month.	Monthly death rate.	Infant survivors.	Monthly death rate.	Deaths within month.
First.....	9,283	139	15.0	1,000.0	15.0	15.0
Second.....	8,176	32	3.9	985.0	3.9	3.9
Third.....	7,400	18	2.4	981.2	2.4	2.4
Fourth.....	6,457	15	2.3	978.8	2.3	2.3
Fifth.....	5,905	20	3.4	976.5	2.4	3.3
Sixth.....	5,352	12	2.2	973.2	2.2	2.2
Seventh.....	4,215	7	1.7	971.1	1.7	1.7
Eighth.....	3,590	8	2.2	969.4	2.2	2.1
Ninth.....	2,825	8	2.8	967.3	2.8	2.7
Tenth to twelfth.....	2,817	23	8.2	964.6	8.2	7.9
				956.7		65.3

From the sum of the deaths within the month in the hypothetical group is derived the computed annual rate for breast-fed babies of 43.3 per 1,000 infants fed. In the same way from the computations that follow, are derived the computed annual rate for babies having mixed feeding—87.4 per 1,000 infants fed—and the computed annual rate for babies having artificial feeding—191.4 per 1,000 infants fed.

MIXED-FED INFANTS.

Month of life.	Actual group.			Hypothetical group of 1,000 infants.		
	Infant survivors.	Deaths within month.	Monthly death rate.	Infant survivors.	Monthly death rate.	Deaths within month.
First.....	281	12	42.7	1,000.0	42.7	42.7
Second.....	608	4	6.6	957.3	6.6	6.3
Third.....	844	8	9.5	951.0	9.5	9.0
Fourth.....	1,303	7	5.4	942.0	5.4	5.1
Fifth.....	1,614	9	5.6	936.9	5.6	5.2
Sixth.....	1,977	8	4.0	931.7	4.0	3.7
Seventh.....	2,845	9	3.2	928.0	3.2	3.0
Eighth.....	3,291	11	3.3	925.0	3.3	3.1
Ninth.....	3,690	12	3.1	921.9	3.1	2.9
Tenth to twelfth.....	3,878	27	7.0	919.0	7.0	6.4
				912.6		87.4

ARTIFICIALLY-FED INFANTS.

Month of life.	Actual group.			Hypothetical group of 1,000 infants.		
	Infant survivors.	Deaths within month.	Monthly death rate.	Infant survivors.	Monthly death rate.	Deaths within month.
First.....	958	53	55.3	1,000.0	55.3	55.3
Second.....	1,531	29	18.9	944.7	18.9	17.9
Third.....	2,006	37	18.4	926.8	18.4	17.1
Fourth.....	2,426	40	16.5	909.7	16.5	15.0
Fifth.....	2,605	41	15.7	894.7	15.7	14.0
Sixth.....	2,725	56	20.6	880.7	20.6	18.1
Seventh.....	2,919	40	13.7	862.6	13.7	11.8
Eighth.....	3,042	36	11.8	850.8	11.8	10.0
Ninth.....	3,153	31	9.8	840.8	9.8	8.2
Tenth to twelfth.....	3,122	90	28.8	832.6	28.8	24.0
				808.6		191.4

In the tables showing computed infant mortality rates by type of feeding, the numbers of infants having the stated type of feeding during the first month and during the ninth month are shown. In addition, the total number of months of feeding of a specified type from the first to the ninth is given, as a truer indication of the size of the base for the computed rate.

"EXPECTED DEATHS."

In this report the "expected deaths" and "expected rates" are frequently compared with the "actual deaths" or "actual rates." The reason for making such a computation and the method of securing the expected deaths are briefly explained in the following paragraphs.

Suppose, for example, an analysis is to be made of the relation of mother's employment during pregnancy to infant mortality. By classifying live births and deaths according to the employment and nonemployment of the mother during pregnancy, an infant mortality rate for each group can be obtained. The question immediately arises, however, whether an undue proportion of the mothers who worked during pregnancy may not be colored or foreign born, groups in which the infant mortality rates have been found to be high. The excessive mortality, therefore, among the babies of mothers who worked may be due merely to the differences in the composition of the groups. Accordingly the next step is to subdivide the group into the native white, foreign-born white, and colored, and to ascertain in each group the infant mortality rate among babies whose mothers worked during pregnancy and whose mothers did not work. It appears that the rates are still higher for infants of mothers who worked. The question then arises whether this high mortality may not be due to the general conditions of poverty in homes from which mothers go out to work. Or it may be due to the fact that among the foreign-born mothers, it was chiefly the Polish mothers who went out to work. The next step in analysis, therefore, is to subdivide these groups still further and to compare in each of the subgroups the mortality among babies whose mothers worked and those whose mothers did not work. The difficulty then arises that the numbers in each of these homogeneous subgroups are so small that great differences in the rates may be due to chance variation. Evidently, some method of summarizing the results of the findings of the different subgroups is necessary, but if the live births and infant deaths in the different groups are merely added up, the result gives the figures from which the analysis originally proceeded. It is therefore obvious that the method of summarizing must produce results which are independent of the differences in the distributions of the various factors which complicate the findings in the original group. For this purpose, an expected rate is used for comparison with the actual rate.

The method which has been followed in computing an expected rate is, first, to compute the infant mortality rate in each of the subgroups not divided according to the factor upon which information is particularly sought. In the present case infant mortality rates are determined for each color and nationality and earnings group.

The second step is to divide the live births in each of the subgroups into two subdivisions—those whose mothers were, and those whose mothers were not, employed during pregnancy. The third step is to multiply the live births in each of these subdivisions by the infant mortality rate for the subgroup. The result of this multiplication gives the number of infant deaths in each of the subdivisions of the subgroups if the rate which was true of the subgroups applied to each of the subdivisions. These expected deaths are then added so that one total is secured of all the expected deaths among infants of mothers employed, and another of expected deaths of infants of mothers not employed during pregnancy.

These totals of expected deaths are then compared to the totals of actual deaths among infants of mothers employed and not employed during pregnancy.¹

If there is a tendency for employment of the mother to affect adversely the mortality of babies, then in each of the subdivisions of the subgroups the actual number of deaths among infants of mothers employed during pregnancy will tend, other things being equal, to be in excess of the number expected, found by multiplying the live births by the infant mortality rate for the entire subgroup. In each of the subgroups, then, a comparison can be made between the actual number and the expected number of deaths. By adding on the one hand all the expected deaths and on the other all the actual deaths, the validity of the comparison between the actual and expected deaths is preserved, and the result expresses the comparative mortality in the two groups after the influence of differences in nationality and economic condition is eliminated.

In summing up the results from all the subgroups the range of variation due merely to chance is greatly lessened, and the conclusion secures the full value of the weight attached to the number of cases in the comparison.

Expected rates are found by dividing the number of expected deaths by the total number of live births. These rates may be compared to the actual rates in the same way that expected deaths are compared to actual deaths.

In connection with each table showing expected deaths or expected rates, a statement will be found showing the base upon which these have been computed.

¹ It is obvious that adding together the actual deaths in each of the subdivisions of each subgroup will give the total deaths among infants of mothers employed and not employed during pregnancy.

APPENDIX VI.—PREVALENCE OF PRENATAL CARE AND EXTENT TO WHICH THE INFANTS IN THE STUDY WERE REACHED BY INFANT-WELFARE WORK.

In its Baltimore study, the Children's Bureau for the first time in its series of infant mortality inquiries had an opportunity to observe the development of prenatal clinics and infant-welfare work and to ascertain the extent to which these facilities were available to the babies born during the specified period. The prevalence of prenatal care among the mothers of infants born in 1915 and the extent to which the infants were reached by the infant-welfare agencies were included in the scope of the inquiry. In Baltimore no public work had yet been undertaken in the field of prenatal care and infant welfare, but three private agencies, the Johns Hopkins Hospital, the Babies' Milk Fund Association, and the Mothers' Relief Society, had begun in 1914, 1915, and 1916 to carry on systematic prenatal and infant care. Other hospitals and agencies were making examinations of women who came to them during pregnancy and were cooperating in various ways with these three agencies.

Organizations giving prenatal care.

The prenatal care and obstetrical service furnished by the Johns Hopkins Hospital included a maternity ward, an out-patient dispensary open every day, and a free, outside obstetrical service which, however, was limited to mothers living not more than a mile from the hospital.¹ A clinic nurse visited mothers living within the hospital district, and other mothers were referred for nursing care to the organization next described.

The Babies' Milk Fund Association, organized in 1904 for the distribution of pure modified milk, maintained a nursing service which to some extent reached patients of private physicians,² and supplemented the work of prenatal clinics. The association also maintained an obstetrical clinic in a neighborhood far from any hospital, where foreign-born women predominated.³

A third clinic was carried on by the Mothers' Relief Society, which held a prenatal clinic once in two weeks at a settlement house, Lawrence House.⁴ The work of the one nurse employed was supplemented through cooperation with the Instructive Visiting Nurse Association.

A prospective mother was received by the Johns Hopkins Hospital obstetrical clinic only with the understanding that she would return to the clinic at least monthly until confinement⁵ and

¹ Almost all of the following wards were included in this area: 2, 3, 5, 6, 7, 8, and 16.

² Among the 665 married women attended during pregnancy by the Babies' Milk Fund Association approximately 63 per cent were patients of a prenatal clinic, while about 11 per cent were patients of a private physician only. Twenty-five per cent had no attendant during pregnancy except the nurse of this association. Mothers receiving care from a nurse only have not been included in this report as having prenatal care.

³ The eastern part of the twenty-fourth ward, in the district known as Locust Point. The ward as a whole showed median earnings of fathers between \$650 and \$850; the median earnings for the Locust Point neighborhood had they been tabulated separately would probably have fallen into the lower earnings group.

⁴ This clinic served parts of wards 4, 22, 21, 23, 18, 19.

⁵ Since 1915 the staff has been increased, and the patient is now expected to visit the clinic monthly until the seventh month, and then every two weeks until confinement.

that the baby would be placed under the care of the Babies' Milk Fund Association until he was at least 1 year of age. The clinic did not usually retain as a patient a woman who could afford a private physician. The Babies' Milk Fund Association endeavored to devote the major part of its work to women in families with less than a stated income; it preferred not to take as clinic patients women who could and would go to a hospital for confinement or who would employ a private physician. The Mothers' Relief Society restricted its work to white married mothers who would otherwise have employed a midwife at confinement. It required of the mother full cooperation in the plan of prenatal care, and tried to have mothers brought to the society during the early months of pregnancy.

The prenatal service rendered by the Johns Hopkins Hospital included at the first visit a complete physical examination with pelvic measurements, and at this and each later visit a urinalysis. At least one home visit was made by the clinic nurse or one of the nurses on the staff of the Babies' Milk Fund Association.⁶

The physician in charge of the Babies' Milk Fund Association clinic examined the mother thoroughly at her first visit, and she was expected to return to the clinic at least monthly. Urinalysis was made monthly in normal cases. The mother was visited in her home about once in ten days, and if abnormal symptoms were found she was urged to visit the clinic more often. An initial physical examination, monthly urinalysis, and weekly visits by a trained nurse comprised the prenatal supervision carried on in normal cases by the Mothers' Relief Society.

Prevalence of prenatal care.

The three agencies doing systematic prenatal work gave medical prenatal care to 893 married mothers (769 of these received care from the Johns Hopkins Hospital) and 128 unmarried mothers of those who were included in the scheduled groups. In addition, 379 married mothers reported prenatal visits from a nurse of the Babies' Milk Fund Association or the Mothers' Relief Society, but no medical prenatal care either from these organizations or from the Johns Hopkins prenatal clinic. Of these 379 mothers, 122 had medical prenatal care from some other clinic and 257 did not have prenatal care from any clinic.

Hospital clinics, other than Johns Hopkins gave prenatal care to 546 married mothers (including the 122 who also had visits from nurses of the Babies' Milk Fund Association or the Mothers' Relief Society) and to 161 unmarried mothers.

Besides the special work organized in the clinics, prenatal advice and care were given by private physicians. A complete statement of the prevalence of prenatal care could be obtained, therefore, only by ascertaining in the case of each mother whether she had received prenatal care during the pregnancy of 1915.⁷ Standards of prenatal care were drawn up in consultation with medical authorities, and it was agreed that to be classified as having any medical prenatal care a mother must at the very least have consulted a physician once

⁶ Since 1915, to the routine of each visit have been added the determination of blood pressure and an abdominal examination. In every case a Wassermann test is taken on the first visit and treatment is instituted if a positive reaction is secured.

⁷ The discussion in the following pages is limited to mothers of infants of legitimate birth in the scheduled group.

during her pregnancy or have had a urinalysis.^a Consultations with or advice given by a nurse or midwife were not considered prenatal care.

On this basis slightly over half, 52.4 per cent, of the mothers of legitimate infants born in Baltimore in 1915, received some medical prenatal care; nearly half received none. Seven and eight-tenths per cent of the mothers received care from one or more of the three clinics described above, 4.8 per cent from other clinics, and 39.8 per cent from a private physician only.

Prenatal care and poverty.

Table I shows the prevalence of prenatal care in the different earnings groups. A marked correlation between the prevalence of prenatal care and the earnings of the fathers is evident from the table. Of the mothers in families where the fathers earned less than \$850, 56 per cent, as compared with 35 per cent in the families where the fathers earned \$850 to \$1,849, and with 14 per cent in families where the fathers earned \$1,850 or over, received no prenatal care. Of the mothers in families where the fathers earned \$2,850 and over, only 10.8 per cent were without some prenatal care.

But the greatest lack of care did not occur in the very poorest families. In these families clinic care was most prevalent, reaching 34.9 per cent of the mothers in families with no fathers' earnings and 30.4 per cent of the mothers in families with fathers' earnings less than \$450. In families with a little more money, far fewer mothers went to the clinics, and among several of the groups under \$850 the increase in private care as the fathers' earnings rose was less marked than the decrease in clinic care. Therefore fewer mothers had prenatal care in families where fathers earned more than \$450 but less than \$650 than in families where the fathers earned nothing or under \$450.

TABLE I.—Prevalence of prenatal care among mothers,^a by source of care and by earnings of father.

Earnings of father.	Total mothers, ^a	Per cent having no prenatal care.	Per cent having prenatal care.			Per cent not reported.
			Total.	From clinic physician, ^b	From private physician only.	
Total.....	11,463	47.5	52.4	12.6	39.8	0.1
No earnings.....	232	41.4	57.3	34.9	22.4	1.3
Under \$850.....	7,331	55.6	44.3	16.6	27.7	.1
Under \$450.....	1,068	53.0	46.9	30.4	16.5	.1
\$450-\$549.....	1,551	58.7	41.0	20.8	20.2	.3
\$550-\$649.....	1,566	59.8	40.1	13.0	27.1	.1
\$650-\$849.....	2,546	52.7	47.3	7.1	40.1	.1
\$850-\$1,849.....	3,205	34.8	65.1	3.0	62.2	(c)
\$850-\$1,049.....	1,675	40.5	59.5	4.1	55.4	.1
\$1,050-\$1,249.....	696	30.0	70.0	2.3	67.7	.....
\$1,250-\$1,449.....	444	32.9	67.1	2.5	64.6	.....
\$1,450-\$1,849.....	390	21.3	78.7	.3	78.5	.....
\$1,850 and over.....	456	13.8	86.1	.2	86.0	.....
\$1,850-\$2,249.....	143	18.2	81.8	.7	81.1	.....
\$2,250-\$2,849.....	101	13.9	86.1	.....	86.1	.....
\$2,850 and over.....	212	10.8	89.2	.....	89.2	.....
Not reported.....	239	39.7	58.6	18.8	39.7	1.7

^a Includes only married mothers to whom children were born in 1915.

^b With or without care from other physician.

^c Not shown when less than one-tenth of 1 per cent.

* In 103 cases the mother reported urinalysis, but no consultation with a physician.

In families where the father's earnings were below \$850, less than one-third of the mothers sought private prenatal care and less than one-fifth were reached by clinics. In families where the father's earnings were \$850 and below \$1,850, less than two-thirds had private prenatal care and less than 1 in 30 was reached by the clinics. In families where the fathers earned \$1,850 or over, nearly seven-eighths of the mothers sought private prenatal care.

Prenatal care and color and nationality.

The different customs of the several race and nationality groups also play their part in causing the variations in prevalence of prenatal care. In general, of course, the more the group clings to the employment of midwives at confinement the fewer are the mothers in the group who have medical care during pregnancy. Thus, in Baltimore, at one extreme are the Polish mothers with 86.1 per cent (Table II) reporting no prenatal care (and 77.6 per cent attended by midwives at confinement), and at the other extreme the colored mothers and the native white mothers with 42.8 per cent and 41.5 per cent, respectively, reporting no prenatal care (and 25.9 per cent and 27.4 per cent, respectively, employing midwives at confinement). The six nationality groups fall into two divisions: First, the native white mothers, the colored mothers, and the foreign-born Jewish mothers, of whom many, relatively, had prenatal care; and the Polish, Italian, and "all other foreign" mothers, of whom relatively few had prenatal care.

TABLE II.—Prevalence of prenatal care among mothers,¹ by source of care and by color and nationality of mother.

Color and nationality of mother.	Total mothers. ¹	Per cent having no prenatal care.	Per cent having prenatal care.					Per cent not reported.
			Total.	From clinic physician ² .			From private physician only.	
				Total.	The three clinics.	Other clinics.		
Total.....	11,463	47.5	52.4	12.6	7.8	4.8	30.8	0.1
Native white.....	7,117	41.5	58.3	5.6	3.8	1.8	52.8	.1
Jewish.....	996	46.5	53.4	31.7	22.6	9.1	21.7	.1
Polish.....	646	86.1	13.9	8.2	5.7	2.5	5.7	.....
Italian.....	435	77.9	22.1	8.5	6.4	2.1	13.6	.....
All other foreign-born white.....	780	63.1	36.5	8.8	6.4	2.4	27.7	.4
Colored.....	1,489	42.8	57.0	38.1	18.9	19.2	18.9	.3

¹ Includes only married mothers to whom children were born in 1915.

² With or without care from other physician.

The native white mothers depended mainly on private physicians, while the foreign-born Jewish mothers and the colored mothers depended mainly on the clinics. In the three other groups where the majority of mothers had no prenatal care, about 1 mother in 12 had been reached by the clinics and the percentages having private medical prenatal care ranged from 5.7 per cent of the Polish mothers to 27.7 per cent of the "other foreign-born" mothers.

The three clinics doing systematic prenatal work were so located as to be accessible to mothers in the very poor districts in which

tive white families predominated. In the wards within a mile of Johns Hopkins, which treated more prenatal patients than any other clinic, occurred about two-thirds of the births to Jewish, Polish, and Italian mothers. The principal colored neighborhoods were not so accessible to Johns Hopkins and were less accessible to the Babies' Block Fund Association clinic. The Mothers' Relief Society did not accept colored patients. These three clinics together reached 22.6 per cent of the total foreign-born Jewish mothers and 18.9 per cent of the total colored mothers. The other clinics were accessible to certain other very poor districts, including the principal colored neighborhoods, and reached 9.1 per cent of the foreign-born Jewish mothers and 19.2 per cent of the colored mothers. In the other nationality groups much smaller proportions of the mothers were reached by these clinics.

TABLE III.—Prevalence of prenatal care among mothers,¹ from specified source, by ward of residence and median earnings of father.

Ward of residence and median earnings of father.	Total mothers.	Per cent having no prenatal care.	Per cent having prenatal care.					Per cent not reported.
			Total.	From clinic physician. ²			From private physician only.	
				Total.	The three clinics.	Other clinics.		
Total.....	11,463	47.5	52.4	12.6	7.8	4.8	39.8	0.1
Median earnings:								
Under \$650—								
Ward 2.....	652	76.5	23.5	10.7	7.8	2.9	12.7	.....
Ward 3.....	647	63.1	36.9	26.3	19.8	6.5	10.7	.....
Ward 4.....	240	57.1	42.9	18.8	5.4	13.3	24.2	.....
Ward 22.....	290	54.5	45.5	20.7	4.8	15.9	24.8	.....
Ward 5.....	420	50.5	49.5	37.4	30.7	6.7	12.1	.....
Ward 17.....	287	41.1	58.5	28.6	6.3	22.3	30.0	.....3
Median earnings:								
\$650-\$849—								
Ward 1.....	825	71.0	29.0	5.0	3.4	1.6	24.0	.....
Ward 24.....	630	69.2	30.6	6.3	5.1	1.3	24.3	.....2
Ward 21.....	465	54.2	45.4	14.4	8.8	5.6	31.0	.....4
Ward 6.....	623	52.8	47.2	18.0	14.6	3.4	29.2	.....
Ward 23.....	370	49.7	50.3	10.5	3.8	6.8	39.7	.....
Ward 18.....	281	49.1	50.5	16.7	6.4	10.3	33.8	.....4
Ward 7.....	694	48.4	51.6	14.0	12.8	1.2	37.6	.....
Ward 19.....	401	43.9	56.1	11.0	6.5	4.5	45.1	.....
Ward 10.....	356	43.5	55.9	20.8	15.2	5.6	35.1	.....6
Ward 20.....	643	38.6	61.4	4.8	2.5	2.3	56.6	.....
Ward 11.....	157	37.0	61.8	9.6	3.2	6.4	52.2	.....6
Ward 13.....	489	33.7	66.1	1.8	.8	1.0	64.2	.....2
Ward 8.....	634	33.0	66.9	10.6	8.7	1.9	56.3	.....2
Ward 14.....	308	31.8	67.5	15.3	4.2	11.0	52.3	.....6
Median earnings:								
\$850 and over—								
Ward 15.....	645	29.8	69.9	5.3	.8	4.5	64.7	.....3
Ward 12.....	457	28.8	70.9	6.9	3.9	3.0	64.1	.....2
Ward 16.....	452	24.1	75.9	7.3	1.8	5.5	68.6	.....
Ward 9.....	517	21.9	77.8	5.4	4.6	.8	72.3	.....4

¹Includes only married mothers to whom children were born in 1915.

²With or without care from other physician.

Prenatal care and wards.

Of the five wards (wards 3, 5, 10, 17, and 22) in which 20 per cent or more of the mothers received clinic care, four were among the poorest wards in the city (Table III). Three of these (3, 5, and 10) were within the Johns Hopkins Hospital district. The other two wards included districts with a large proportion of colored mothers which were conveniently accessible to other hospitals. Other wards showing a large proportion of mothers receiving prenatal care from clinics were ward 4, which was conveniently accessible to two hospitals; wards 6 and 7, which were within the Johns Hopkins district, and ward 14, which contained a large colored population and was conveniently accessible to other clinics. Wards 3 and 5 had a considerable Jewish population; it is noteworthy that ward 2, which was in the Johns Hopkins district, had a relatively low proportion of mothers who reported prenatal care, a fact which may be related to its relatively large Polish population.

Grade of prenatal care.

An attempt was made to classify the care received by the mothers roughly into three grades, which were determined upon after consultations with medical authorities. These grades are designated by the letters A, B, and C—grade C including all cases having the minimum of care already noted which could not qualify as either A or B.

To qualify in grade B the care received by the mother must have satisfied all four of the following requirements:

- (1) Some supervision by a physician.
- (2) At least one urinalysis.
- (3) At least an abdominal examination.
- (4) Pelvic measurements if a primipara.

To qualify in grade A, the care must have fulfilled the following additional requirements: Monthly visits to clinic from the fifth to the ninth month or under supervision of private physician from the fifth to the ninth month, and monthly urinalysis during the same period.

Several points should be mentioned in connection with the grading of care. In the first place, the requirements even for grade A care are low and may by no means be considered ideal. The fact that so small a proportion of mothers received care of grade A with its low standard is therefore all the more significant. In the second place, though the care given by the three clinics was based upon their records, the classification of care given by the private physicians was based upon the mothers' statements. The results are, therefore, subject to qualification in that the mothers' memories may have been at fault or that the mothers may not have understood the object or the scope of the examination made by the physicians. On the other hand, the agents were given careful instructions in regard to the questions to be asked and in every case the answers were so classified as to overstate rather than to understate the extent of care actually received. In the third place, it should be emphasized that the results of this study can not be interpreted as in any way a criticism of the physicians or the clinics, since the small proportion of cases receiving

ade of care is largely determined by the fact that the l not present themselves for treatment early enough in ncies, or did not continue visits with sufficient regularity. showing the fuller cooperation of the mothers is required, n be secured only after the importance of early care is ogized and appreciated.

ts of the classification by grades of care is shown in Of the entire group of mothers of legitimate infants, 5.1 d grade A, 17.1 per cent had grade B, and 25.6 per cent care. The proportion with grade A care was less than n all earnings groups under \$850, and between 5 and 10 he groups \$850 to \$1,449, but rose to 39.2 per cent in the 0 and over.

Prevalence of prenatal care among mothers,¹ by grade of care and by earnings of father.

Earnings of father.	Total mothers. ¹	Per cent having prenatal care of specified grades.				
		Total.	Grade A.	Grade B.	Grade C.	Grade not reported.
.....	11,463	52.4	5.1	17.1	25.6	4.5
.....	232	57.3	1.7	28.9	23.3	3.4
.....	7,331	44.3	2.2	17.9	21.7	2.5
.....	1,668	46.9	1.3	25.7	17.7	2.2
.....	1,551	41.0	1.8	19.5	18.2	1.5
.....	1,566	40.1	1.6	15.7	20.3	2.5
.....	2,546	47.3	3.5	13.2	27.2	3.4
.....	3,205	65.1	8.5	14.0	34.6	8.0
.....	1,675	59.5	6.6	13.3	33.1	6.6
.....	696	70.0	8.2	14.5	37.6	9.6
.....	444	67.1	9.2	13.5	36.9	7.4
.....	390	78.7	16.4	17.2	33.3	11.8
.....	456	86.1	30.3	17.3	28.9	9.6
.....	143	81.8	21.0	14.0	36.4	10.5
.....	101	86.1	24.8	23.8	26.7	10.9
.....	212	89.2	39.2	16.5	25.0	8.5
.....	239	58.6	4.2	22.6	23.4	8.4

..... married mothers to whom children were born in 1915.

care was most prevalent in the poorest families, with 28.9 per cent all in the "No earnings" group and 25.7 per cent of all in the "\$450" group.⁹ Grade C care, on the other hand, was most prevalent in the families between the very poor and the well to do. The percentage having this grade of care ranging from 33.1 to 37.6 per cent of all in the families where the fathers earned \$850 but less than \$1,250, but falling below 30 per cent in the most prosperous families and below 20 per cent in very poor families.

In the poorest families (where the fathers earned less than \$450) the most prosperous families (where the fathers earned \$1,250) were the mothers who had grade A or grade B care more prevalent than the mothers who had grade C care. In the poorest families care of grades A or B was practically all grade B; in

..... percentage of grade B care at \$2,250 to \$2,849 is based on a group of 101 mothers of whom 76 were of a stated grade. This variation from the general trend has little significance in so

the earnings group from \$2,250 to \$2,849, it was about evenly divided between grades A and B; and in the group \$2,850 and over, it was mainly grade A.

In quality of care even more than in general prevalence of care the mothers in families of average means fared less well than the very poor.

Prenatal care for 48 per cent of the mothers who received care did not begin until after the fifth month, and consequently it could not satisfy the requirements for grade A. More than one-fourth of the mothers who were classified as having prenatal care saw the physician only once during pregnancy.¹⁰ Only 31.4 per cent had had as many as five consultations.

¹⁰ A visit merely to engage the services of a physician without medical consultation was not counted as a consultation.

CONFINEMENT CARE.

Hospital facilities.

At the time of this study 13 hospitals received maternity cases ¹¹ and 5 maintained outside obstetrical service, with the assistance of students in Baltimore medical schools.

Attendant at birth.

In all, 67.4 per cent of the mothers were attended at confinement by a physician (Table V). Confinement at home with a private physician attending was the predominating type of confinement care in the city as a whole, with 47.1 per cent of the total births studied. Next in importance numerically were the midwife cases, with 32.3 per cent of the total births. Confinements attended by the outside obstetrical service of a hospital and confinements occurring in a hospital were about equal in number with 9.9 and 9.5 per cent respectively of the total births. The 24 births to mothers delivered by the obstetrician of the Babies' Milk Fund Association and the 82 births to mothers delivered by the obstetrician of the Mothers' Relief Society were together less than one per cent of the total. Twenty-nine births, or 0.2 per cent of the total, took place with neither midwife nor physician in attendance.

Confinement care, like prenatal care, shows the greatest lack of medical attendance, according to Table VI, in families between the very poor and those who had more than the average income. The percentage of the mothers who were attended by midwives was only 20.7 per cent in the group in which the husband earned nothing and free hospital service reached the largest numbers of cases, but the percentage rose to 44 per cent in the groups in which the fathers earned between \$450 and \$649. In the families where the fathers earned \$650 or more the numbers attended by midwives decreased, but only in families where the fathers earned at least \$1,050 was the percentage of midwife cases smaller than in the poorest group, where the husbands earned nothing.

TABLE V.—Attendant at birth and place of confinement.

Attendant at birth and place of confinement.	Legitimate births in 1915.	
	Number.	Per cent distribution.
Total.....	11,613	100.0
Physician.....	7,830	67.4
In hospital.....	1,105	9.5
Not in hospital.....	6,725	57.9
Outside obstetrical service.....	1,150	9.9
Babies' Milk Fund Association.....	24	0.2
Mothers' Relief Society.....	82	0.7
Private.....	5,469	47.1
Midwife.....	3,754	32.3
Other and none.....	29	0.2

¹¹ See Report on the study of agencies in Baltimore, Md., caring for women in confinement, by Louise Pearce, M. D. Transactions of the third annual meeting of the American Association for Study and Prevention of Infant Mortality, Cleveland, Ohio, 1912, pp. 272-275.

TABLE VI.—Attendant during confinement period of mothers, by place of confinement, and earnings of father.

Earnings of father.	Total mothers. ¹	Per cent attended during confinement period—				
		By physician.			By midwife.	By other and no attendant.
		Total.	In hospital.	Outside of hospital.		
Total.....	11,463	67.4	9.5	57.9	32.4	0.3
No earnings.....	232	78.0	26.3	51.7	20.7	1.3
Less than \$850.....	7,331	60.6	7.9	52.7	39.1	.2
Less than \$450.....	1,668	64.3	11.8	52.5	34.8	.8
\$450-\$549.....	1,551	56.4	8.8	47.5	43.5	.1
\$550-\$649.....	1,566	56.3	7.0	49.2	43.7	.1
\$650-\$849.....	2,546	68.4	5.4	58.0	36.6	.....
\$850-\$1,849.....	3,205	77.8	9.1	68.7	22.0	.2
\$850-\$1,049.....	1,675	72.1	6.6	65.6	27.5	.4
\$1,050-\$1,249.....	696	81.9	8.5	73.4	18.1	.....
\$1,250-\$1,449.....	444	80.9	12.4	68.5	19.1	.....
\$1,450-\$1,849.....	390	91.5	17.2	74.4	8.2	.3
\$1,850 and over.....	456	93.4	25.9	67.5	6.6	.....
\$1,850-\$2,249.....	143	86.7	29.4	57.3	13.3	.....
\$2,250-\$2,849.....	101	94.1	25.7	68.3	5.9	.....
\$2,850 and over.....	212	97.6	23.6	74.1	2.4	.....
Not reported.....	239	74.9	15.1	59.8	24.7	.4

¹ Includes only married mothers to whom children were born in 1915.

Of the mothers who were delivered in hospitals relatively the fewest were among families of average earnings—that is, between \$650 and \$849; in this group less than 6 per cent of the mothers went to a hospital. But in the families where the fathers earned nothing and in the families where the fathers earned at least \$1,850, approximately 25 per cent of the mothers were delivered in a hospital.

Midwife care was not so prevalent among the colored as among the white mothers in Baltimore. No one nationality group of white mothers—not even the native white women—showed quite so high a percentage of attendance by a physician as the colored mothers. Of the foreign-born groups, the Jewish mothers had relatively the largest number attended by a physician and the Polish mothers had relatively the fewest. Except among the native white mothers, with their comparatively large numbers in the upper earnings groups, these differences in the prevalence of medical care at confinement, in the several color and nationality groups, correspond with the differences in the numbers reached by prenatal care from the clinics.

A considerable number of mothers had both a midwife and a physician in attendance. In 208 cases (5.3 per cent of all attended by midwives) a physician was called in during labor and the birth certificate was signed by the physician and in 93 cases (2.5 per cent of all delivered by midwives) a physician was in attendance after the delivery. In addition, 287 mothers not attended by a midwife at confinement employed a midwife as nurse.

Of the 29 mothers having neither physician nor midwife in attendance at confinement, 5 had a physician after the delivery.

TABLE VII.—*Type of attendant during confinement period, by nationality of mother.*

Color and nationality of mother.	Total mothers. ¹	Per cent attended during confinement period—				
		By physician.			By midwife.	By other and no attendant.
		Total.	In hospital.	Outside of hospital.		
Total.....	11,463	67.4	9.5	57.9	32.4	0.3
Native white.....	7,117	72.4	8.1	64.4	27.4	.2
Jewish.....	996	64.9	23.8	41.1	35.0	.1
Polish.....	646	21.8	2.9	18.9	77.6	.6
Italian.....	435	54.7	2.3	52.4	44.8	.5
All other foreign-born white.....	780	56.5	5.9	50.6	42.8	.6
Colored.....	1,489	73.9	13.5	60.4	25.9	.2

¹Includes only married mothers to whom children were born in 1915.

Visits by attendant during confinement period.

The usual arrangement reported both in cases attended by physicians and in those attended by midwives was a daily visit through the fourth day and at least one visit thereafter. Seven-eighths of the physicians' cases for which the arrangement of visits was reported and practically all the midwife cases fall into this group. The number of visits varied with the economic status of the family. When the fathers' earnings were under \$650, less than 10 per cent of the mothers saw the physician 10 times or oftener; when the fathers earned \$1,850 or more, 40.3 per cent of the mothers saw the physician 10 times or oftener.

Approximately 95 per cent of the mothers who were under the supervision of a physician during pregnancy and 37 per cent of those who had no prenatal care were attended by a physician at confinement.

Nursing care.

More than one mother in four had no professional nursing care. The greatest lack of such care appeared in the groups where fathers' earnings were low among mothers who had been attended by a private physician. The midwife usually gave nursing care to the mother whom she had delivered and such nursing care was the predominating type in families where the fathers earned less than \$850. Among the families where the fathers earned \$850 or more, the practical nurse was in attendance more commonly than the midwife. Only 3.5 per cent of all mothers were cared for by a resident trained nurse, and only in families where the father earned \$2,850 or more was this type of care predominant. Care by a visiting nurse was reported by 4.8 per cent of the mothers. Among the foreign-born Jewish mothers and the colored mothers the proportions cared for by a visiting nurse rose to 12.1 per cent and 11.6 per cent, but in both groups more mothers were nursed by midwives than by visiting nurses.

TABLE VIII.—Number of visits received by mothers from physician following delivery, by earnings of father.

Earnings of father.	Total mothers. ¹	Per cent having no visits from physician following delivery.	Per cent ² having specified number of visits from physician following delivery.						Per cent not reported as to visits.
			Total.	1	2-3	4-9	10 and over.	Not reported.	
Total.....	9,867	36.7	57.0	0.4	2.1	30.4	15.6	8.5	6.3
No earnings.....	194	25.3	70.6	2.1	3.6	30.9	8.2	25.8	4.1
Under \$450.....	6,427	43.5	50.9	.5	2.6	29.9	10.7	7.1	5.6
Under \$450.....	1,457	38.8	54.8	1.0	3.2	30.9	8.9	10.8	6.4
\$450-\$549.....	1,372	47.4	47.9	.4	3.1	28.2	8.2	8.0	4.7
\$550-\$649.....	1,369	49.2	46.4	.2	2.3	28.6	9.2	6.1	4.4
\$650-\$849.....	2,229	40.6	52.9	.3	2.2	31.1	14.5	4.8	6.6
\$850-\$1,849.....	2,699	25.6	66.8	.3	1.0	33.2	24.5	7.9	7.6
\$850-\$1,049.....	1,428	31.7	60.5	.5	1.0	32.7	20.7	5.7	7.8
\$1,050-\$1,249.....	582	21.5	71.3	.2	.9	39.2	24.1	7.0	7.2
\$1,250-\$1,449.....	372	22.0	70.7	.....	.....	31.5	26.9	11.6	7.3
\$1,450-\$1,649.....	317	9.8	82.6	.....	1.6	28.2	40.1	14.8	6.6
\$1,850 and over.....	352	8.0	85.4	.3	.6	18.8	40.3	25.4	6.6
\$1,850-\$2,249.....	116	16.4	73.3	.....	.9	17.2	23.4	26.7	10.3
\$2,250-\$2,849.....	80	.....	.....	.....	.....	.....	.....	.....	.....
\$2,850 and over.....	186	2.4	91.6	.6	.6	18.7	47.0	24.7	6.9
Not reported.....	186	31.9	58.4	.5	1.6	29.2	15.7	11.4	9.7

¹ Includes only mothers with no complications of confinement. In tabulation the following were included as complications: Instrumental delivery, Cesarean section, convulsions, stillbirth, and miscarriage.

² Not shown where base is less than 100.

The period of nursing care¹² was longest among the mothers having a resident trained nurse, but more than two-thirds of the mothers confined in a hospital and of the mothers employing a practical nurse had nursing care during two weeks or longer. Close to nine-tenths of the mothers cared for by a visiting nurse had less than two weeks' nursing care; 30.6 per cent of them were nursed for less than 7 days. Among the midwife cases, over half had care for less than 10 days; 4.5 per cent were nursed for less than 7 days.

The period during which mothers stayed in bed was somewhat longer than the period during which they had professional nursing care. The usual time was from 10 to 13 days. It was shorter than this among the Poles and the Italians of whom 20 and 17 per cent, respectively, were up and about before the fourth day. But only in families where the fathers earned at least \$1,450 did half the mothers with no reported complications of confinement stay in bed for 14 days or longer.

Extra household help (usually given by a relative) was continued after the professional nursing had ceased and the mother was up and about. It lasted in most cases from four to six weeks. Ninety mothers (0.8 per cent of all) had no help and 269 mothers (2.3 per cent of all) had help which lasted less than one week.

¹² If the mother received more than one type of nursing care, the time during which the dominant type of care was received is here considered.

TABLE IX.—Type of nursing care¹ received by mothers, by earnings of father.

Earnings of father.	Total moth-ers. ²	Per cent having no nurs-ing care. ³	Per cent having specified type of nursing care.							
			Total.	Hos-pital. ⁴	Trained nurse.			Mid-wife.	Prac-tical nurse.	Not re-ported.
					Total.	Resi-dent.	Visit-ing. ⁵			
Total.....	11,463	28.6	71.4	9.5	8.3	3.5	4.8	34.4	18.7	0.5
No earnings.....	232	34.9	65.1	26.7	10.8	2.6	8.2	21.6	4.7	1.3
Under \$850.....	7,331	31.8	68.2	8.0	7.6	1.0	6.6	41.0	11.3	.4
Under \$450.....	1,686	37.2	62.8	11.8	11.0	.4	10.6	35.9	4.0	.1
\$450-\$549.....	1,551	30.1	69.9	9.0	9.7	.7	9.0	44.2	.7	.4
\$550-\$649.....	1,596	29.9	70.1	7.0	5.9	.4	5.4	45.7	11.2	.3
\$650-\$849.....	2,546	30.4	69.6	5.5	5.2	1.9	3.3	39.4	19.0	.6
\$850-\$1,849.....	3,205	23.6	76.4	9.1	6.7	5.6	1.2	24.5	35.3	.8
\$850-\$1,049.....	1,675	26.0	74.0	6.7	5.3	3.6	1.7	30.1	31.0	.8
\$1,050-\$1,249.....	696	26.0	75.0	8.5	5.7	4.7	1.0	21.1	39.4	.3
\$1,250-\$1,449.....	444	19.8	80.2	12.4	7.2	7.0	.2	22.0	37.8	.7
\$1,450-\$1,849.....	360	15.1	84.9	17.2	14.1	13.8	.3	9.0	43.1	1.5
\$1,850 and over.....	456	7.5	92.5	25.9	29.4	28.9	.4	7.2	29.2	.9
\$1,850-\$2,249.....	143	8.4	91.6	29.4	15.4	14.7	.7	14.0	32.2	.7
\$2,250-\$2,849.....	101	8.9	91.1	25.7	26.7	25.7	1.0	6.9	31.7	.....
\$2,850 and over.....	212	6.1	93.9	23.6	40.1	40.1	.....	2.8	25.9	1.4
Not reported.....	239	31.0	69.0	15.1	9.2	5.0	4.2	28.9	15.5	.4

¹ In this table nursing care includes only care beginning within first three days after delivery. If two kinds of care were given, the first in order is given preference.

² Includes only married mothers to whom children were born in 1915.

³ Includes 27 mothers who had nursing care only after the third day, and 126 for whom no information in regard to nursing care was secured.

⁴ Includes 6 mothers not delivered in hospital, but taken to hospital within three days from delivery. In addition 25 mothers were taken to hospital later in confinement period.

⁵ In addition, 13 mothers had care from visiting nurse after the third day; 10 of these had no professional nursing within three days, 1 had hospital nursing, 1 midwife, and 1 practical nurse.

TABLE X.—Type of nursing care¹ received by mothers, by color and nationality of mother.

Color and national-ity of mother.	Total moth-ers. ²	Per cent having no nurs-ing care. ³	Per cent having specified type of nursing care.							
			Total.	Hos-pital. ⁴	Trained nurse.			Mid-wife.	Prac-tical nurse.	Type not re-ported.
					Total.	Resi-dent.	Visit-ing. ⁵			
Total.....	11,463	28.6	71.4	9.5	8.3	3.5	4.8	34.4	18.7	0.5
White.....	9,974	26.7	73.3	8.9	7.6	3.8	3.8	35.3	20.9	.6
Native.....	7,117	28.1	71.9	8.1	7.5	4.9	2.6	29.4	26.1	.7
Foreign born.....	2,857	23.3	76.7	11.0	7.8	.9	8.9	49.8	7.9	.3
Jewish.....	996	17.9	82.1	23.9	13.3	1.1	12.1	36.1	8.4	.4
Polish.....	646	11.6	88.4	2.9	3.1	.2	2.9	82.0	.3	.....
Italian.....	435	43.2	56.8	2.3	6.2	.....	6.2	46.0	2.3	.....
All other.....	780	28.8	71.2	5.9	5.6	1.7	4.0	42.6	16.4	.6
Colored.....	1,489	40.8	59.2	13.6	13.2	1.7	11.6	28.5	3.6	.3

¹ In this table nursing care includes only care beginning within first three days after delivery. If two kinds of care were given, the first in order is given preference.

² Includes only married mothers to whom children were born in 1915.

³ Includes 27 mothers who had nursing care only after the third day, and 126 for whom no information in regard to care was secured.

⁴ Includes 6 mothers not delivered in hospital, but taken to hospital within three days from delivery. In addition 25 mothers were taken to hospital later in confinement period.

⁵ In addition, 13 mothers had care from visiting nurse after the third day; 10 of these had no professional nursing within three days, 1 had hospital nursing, 1 had midwife, and 1 practical nurse.

TABLE XI.—Duration of nursing care¹ received by mothers, by color and nativity of mother.

Duration of nursing care. ¹	Total mothers. ²		Native white mothers.		Foreign-born white mothers.		Colored mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	11,463	100.0	7,117	100.0	2,857	100.0	1,489	100.0
With no nursing care ³	3,276	28.6	2,002	28.1	666	23.3	608	40.8
With care.....	8,187	71.4	5,115	71.9	2,191	76.7	881	59.2
Less than 7 days.....	421	3.7	146	2.1	183	6.4	92	6.2
7-9 days.....	2,216	19.3	961	13.5	942	33.0	313	21.0
10-13 days.....	2,618	22.8	1,734	24.4	601	21.0	263	19.0
14 days and over.....	2,888	25.2	2,244	31.5	459	16.1	185	12.4
Duration not reported.....	44	.4	30	.4	6	.2	8	.5

¹ In this table nursing care includes only care beginning within first three days after delivery.

² Includes only married mothers to whom children were born in 1915.

³ Includes 27 mothers who had nursing care only after the third day, and 126 for whom no information is regard to care was secured.

TABLE XII.—Number of days mothers spent in bed or in hospital following delivery, by earnings of father.

Earnings of father.	Total mothers. ¹	Per cent with specified number of days in bed or in hospital following delivery.					
		Less than 1	1-3	4-6	7-9	10-13	14 and over.
Total.....	8,780	0.1	3.4	4.6	24.2	45.1	22.7
No earnings.....	178	.....	5.6	1.7	20.8	41.6	30.3
Under \$450.....	1,229	.....	6.2	6.4	30.7	35.1	21.4
\$450-\$649.....	2,432	(³)	5.3	6.5	28.0	41.4	18.6
\$650-\$849.....	1,999	.....	2.5	4.6	25.7	49.4	17.8
\$850-\$1,049.....	1,275	.....	1.5	2.7	19.1	53.8	22.8
\$1,050-\$1,249.....	530	.....	.8	2.6	20.0	52.1	24.5
\$1,250-\$1,449.....	327	.....	.3	2.1	16.2	55.0	26.3
\$1,450 and over.....	626	.....	.6	1.1	9.3	29.0	50.0
Not reported.....	164	.....	.6	2.4	4.3	28.0	40.9

¹ Includes only mothers with no complications of confinement. In tabulation the following were included as complications: Instrumental delivery, Cesarean section, convulsions, stillbirth, and miscarriage.

² Excludes 1,107 mothers for whom number of days was not reported or who died without getting up.

³ Not shown when less than one-tenth of 1 per cent.

TABLE XIII.—Number of days mothers spent in bed or in hospital following delivery, by color and nationality of mother.

Color and nationality of mother.	Total mothers. ¹	Per cent with specified number of days in bed or in hospital following delivery.					
		Less than 1	1-3	4-6	7-9	10-13	14 and over.
Total.....	8,780	0.1	3.4	4.6	24.2	45.1	22.7
White.....	7,621	.1	3.6	4.9	22.9	46.3	22.2
Native.....	5,363	(³)	1.2	2.3	19.9	53.7	22.8
Foreign born.....	2,258	.1	9.4	11.0	30.0	28.7	20.8
Jewish.....	789	.....	.8	1.9	22.3	44.0	31.1
Polish.....	521	.6	19.8	19.4	34.9	7.5	17.8
Italian.....	343	.....	16.6	26.5	30.6	17.8	8.5
All other.....	605	.....	7.6	6.8	35.5	33.2	16.9
Colored.....	1,139	.....	1.8	2.5	32.7	37.2	26.7

¹ Includes only mothers with no complications of confinement. In tabulation the following were included as complications: Instrumental delivery, Cesarean section, convulsions, stillbirth, and miscarriage.

² Excludes 1,107 mothers for whom number of days was not reported or who died without getting up.

³ Not shown when less than one-tenth of 1 per cent.

TABLE XIV.—*Household help at confinement and place of confinement, by color and nativity of mother.*

Household help at confinement and place of confinement.	Total mothers:		Native white mothers.		Foreign-born white mothers.		Colored mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	11,483	100.0	7,117	100.0	2,887	100.0	1,489	100.0
At home.....	10,087	87.8	6,297	88.5	2,520	88.2	1,250	83.9
Household help.....	9,856	86.0	6,163	86.6	2,447	85.6	1,245	83.5
Adult.....	9,701	84.6	6,084	85.5	2,384	83.4	1,233	82.8
Child only.....	108	.9	49	.7	44	1.5	12	.8
Laundry only.....	49	.4	30	.4	19	.7	—	—
No household help ¹	212	1.8	134	1.9	73	2.6	5	.3
Away from home.....	1,377	12.0	808	11.4	334	11.7	235	15.8
Not reported.....	19	.2	12	.2	3	.1	4	.3

¹ Includes only married mothers to whom children were born in 1915.

² Includes 123 cases where a practical nurse was employed.

INFANT-WELFARE WORK.

Organizations doing infant-welfare work.

The principal infant-welfare work carried on in Baltimore in 1915 was done by the Babies' Milk Fund Association, which conducted 12 (and from November, 1915, 13) infant-welfare centers. The association nurses were paying instructive visits to the mothers whose babies were less than 1 year of age and nursing sick babies under 3 years of age, and modified milk was dispensed in selected cases under the direction of a physician.

Infants attended at birth by the obstetrician of the Babies' Milk Fund Association and all infants attended by the outside obstetrical service of Johns Hopkins Hospital or born in the lying-in wards of Johns Hopkins were referred, if not in need of medical treatment, to the nurses of the Babies' Milk Fund Association for supervision. Infants born in other hospitals were less regularly referred to this organization. Many cases were reported to it by charitable organizations. It was the aim of the association to have the nurse visit the mother immediately at the close of the confinement period, in order to give instruction in infant care, and continue her visits at least once a month throughout the first year of the baby's life. After the baby was about a month old, the mother was expected to take him to the infant-welfare center for supervision by the physician. The mothers whose babies were receiving breast milk and no other food were urged to repeat these visits at least once a month. The mothers of babies artificially fed were encouraged to report at weekly intervals. The nurse's visits at the home were continued even when the mother failed to take the baby to the infant-welfare center; but it was contrary to the rules of the association for the nurse to direct the feeding of a child who was to be weaned. The centers, again, gave advice about feeding for children who were well or had slight digestive disorders; they did not prescribe treatment for sick children but referred all such cases to the Harriet Lane Hospital or some other clinic for sick children. Nursing care was given, however, to sick children under 3 years of age.

The Babies' Milk Fund Association did not attempt to restrict its infant-welfare work to the very poorest families but as a matter of fact the poorest families predominated among these cases as they did among the prenatal cases.

The policy of the Mothers' Relief Society in relation to infant supervision was changed twice during 1915. During the first months of the year the baby was referred to the Babies' Milk Fund Association at the end of the confinement period. Later, the policy was followed of having the trained nurse of the Mothers' Relief Society continue to visit the mother and instruct her in infant hygiene until the baby was 6 months old. In November the society decided to continue this visiting throughout the first year of infancy. The nurse paid a visit to the home at least once a month but the society had no infant-welfare center for supervision of well babies by a physician. Some of the artificially fed babies, however, were taken to the

society's physician, or to the Harriet Lane Dispensary or some other clinic, for supervision of the feeding.¹³

Infants reached by infant-welfare work.

Only the supervision and advice given by a physician to a mother visiting an infant-welfare center with her baby for consultation, and home visits by a nurse to instruct the mother in the care of her baby are included in the term "infant-welfare work" as used in the present study. Similar advice and supervision are given by private physicians or resident nurses in many well-to-do homes, but no attempt was made to measure the extent of private supervision. Home visits by a nurse for the treatment or care of a baby in sickness or visits by a mother and baby to a hospital or dispensary for this purpose are also excluded from consideration.

Infant-welfare work had been carried on longer than prenatal work and naturally reached more of the families needing care. In all, 2,935 legitimate infants, or 28.2 per cent of those who survived two weeks, had been visited at least once by an infant-welfare nurse or had been taken at least once to an infant-welfare center for consultation.

In the poorest families approximately one-half of the babies had such supervision—48.8 per cent, where the fathers earned nothing, and 51.6 per cent, where the fathers earned less than \$450. Comparison of the several earnings groups shows a steady decrease in the proportion of infants reached by infant-welfare work as the fathers' earnings rise, but in each group below \$850, from one-fourth to one-half of the babies had supervision by infant-welfare agencies. Where the fathers earned at least \$1,850, 3.1 per cent of the babies had such supervision.

TABLE XV.—Prevalence of supervision from infant-welfare agencies, by earnings of father.

Earnings of father.	Infants who survived 2 weeks.		
	Total.	Having supervision from infant-welfare agencies.	
		Number.	Percent. ^a
Total.....	10,397	2,935	28.2
No earnings.....	201	98	48.8
Under \$850.....	6,624	2,347	35.4
Under \$450.....	1,468	758	51.6
\$450-\$549.....	1,391	598	42.8
\$550-\$649.....	1,437	455	31.7
\$650-\$849.....	2,328	566	24.3
\$850-\$1,849.....	2,944	409	13.9
\$850-\$1,049.....	1,551	266	17.2
\$1,050-\$1,249.....	639	80	12.5
\$1,250-\$1,449.....	462	43	10.7
\$1,450-\$1,849.....	352	20	5.7
\$1,850 and over.....	421	13	3.1
\$1,850-\$2,249.....	137	10	7.3
\$2,250-\$2,849.....	92	2	.....
\$2,850 and over.....	192	1	0.5
Not reported.....	207	68	32.9

^a Not shown where base is less than 100.

¹³ The work of the Harriet Lane Hospital, a children's hospital connected with Johns Hopkins, is not included in this discussion which is concerned primarily with the preventive and instructive care of mothers and babies.

As in prenatal work, the organizations had been more successful in reaching colored families and foreign-born Jewish families than any others. Nearly two-thirds (60.5 per cent) of the colored babies and nearly one-half (45.1 per cent) of the babies of foreign-born Jewish mothers had supervision from welfare agencies. The actual number of infants who had such supervision was greatest among the native white families (1,302) but the total number of native white families was large and the percentage having care (20 per cent) was lower in this group than in any other. Even when families with similar earnings are compared, it appears that in each group except that in which fathers' earnings were from \$450 to \$549 fewer infants, relatively, of native white mothers than of foreign-born white mothers had supervision from infant-welfare agencies.

Among the Poles and Italians the agencies were more successful in reaching families where the mother could speak English than families where the mother could not speak English, but the reverse was true in the foreign-born Jewish families.

Two-thirds of the infants who had supervision at any time within 12 months after birth were still having it at the end of the year. About 5 per cent died within the year; less than 1 per cent were discharged to a private physician or transferred from one agency to another without further record of the case; about 6 per cent were dropped by the agency because the mother would not cooperate. But the principal loss of cases occurred in families that moved and were not followed to their new addresses; 18.8 per cent of the infants who had had supervision were not having it at the end of the year because their families had moved.

TABLE XVI.—Prevalence of supervision from infant-welfare agencies, by color and nationality of mother.

Color and nationality of mother.	Infants who survived 2 weeks.		
	Total.	Having supervision from infant-welfare agencies.	
		Number.	Per cent.
Total.....	10,397	2,935	28.2
Native white.....	6,498	1,302	20.0
Foreign-born white.....	2,660	883	33.2
Jewish.....	937	423	45.1
Polish.....	898	134	22.4
Italian.....	395	126	32.3
All other.....	729	196	27.2
Colored.....	1,239	750	60.5

In every ward, as in the city as a whole, a higher percentage of colored than of white infants had supervision. The need of supervision was of course greatest in the poorest wards, but at the time of this study the work seems to have been more developed or more successful in finding response in certain poor wards than in others. In five of the six wards where the father's median earnings were lowest the percentage having supervision was well above the average for the city (28.2), when all infants are considered together. But when the

white infants and the colored infants are considered separately two of these wards (second and seventeenth) did not show high percentages having supervision. In the seventeenth ward, the number having supervision was 40.9 per cent of the total. But of the white infants in this ward only 7.9 per cent had supervision, as compared with the average, 23.9, for white infants, and of the colored infants, who comprised three-fourths of all the infants in the ward, only 53.3 per cent had supervision, as compared with the average, 60.5, for colored infants. In the second ward, where less than 2 per cent of the infants were colored and where very poor white families predominated, the percentage having supervision (23.2) was approximately the average for all white families, rich and poor, throughout the city. The white babies in the fifth ward had the highest percentage for white infants; 48.1 per cent of the total had supervision.

TABLE XVII.—Prevalence of supervision from infant-welfare agencies, by color of mother, and ward of residence.

Ward of residence and median earnings of father.	Per cent ¹ of infants who survived 2 weeks having supervision from infant-welfare agencies.		
	Total mothers.	White mothers.	Colored mothers.
Total.....	28.2	23.9	60.5
Median earnings under \$650:			
Ward 5.....	54.8	48.1	82.7
Ward 22.....	47.0	39.2	73.7
Ward 3.....	41.2	40.6	.....
Ward 4.....	41.1	35.5	.....
Ward 17.....	40.9	7.9	53.3
Ward 2.....	23.2	22.3	.....
Median earnings \$650-\$849:			
Ward 18.....	39.1	31.2	66.1
Ward 21.....	38.0	35.5	.....
Ward 23.....	36.7	30.9	.....
Ward 24.....	36.1	36.1	.....
Ward 10.....	29.8	25.8	.....
Ward 1.....	27.5	27.3	.....
Ward 14.....	27.5	12.4	39.5
Ward 6.....	27.1	22.0	.....
Ward 11.....	25.9	10.0	42.0
Ward 13.....	22.7	22.6	.....
Ward 8.....	22.6	20.7	.....
Ward 7.....	22.4	16.5	71.6
Ward 19.....	22.4	18.9	.....
Ward 20.....	18.1	17.0	.....
Median earnings \$850 and over:			
Ward 12.....	21.0	12.8	65.6
Ward 15.....	17.2	5.1	60.2
Ward 9.....	15.5	11.9	.....
Ward 16.....	13.1	4.6	46.9

¹ Not shown where base is less than 50.

Of the 2,935 infants reached by infant-welfare work, more than half did not receive supervision regularly, but were taken to the centers or were visited by the nurses only at irregular intervals. Over one-third, however, had each an average of a visit a month—either a visit from a nurse or a consultation at the center—from the time the supervision was commenced until the end of the year. And 120 babies, or 4.1 per cent of these reached by the infant-welfare work, had each an average of a visit from the nurse and a visit to the center during each month from the time the baby came under the

supervision of the organization until the end of the year. Nine babies each averaged three or four visits a month, including at least one to the center and one home visit of the nurse in each month during the period from the commencement of care until the end of the first year.

Of the total number of infants who were reached by infant-welfare work, over half, 55.8 per cent, were never taken to the infant-welfare center; 13.8 per cent were taken once; 14.7 per cent were taken from two to four times; 10.1 per cent were taken from 5 to 10 times; and only 5.3 per cent were taken more than 10 times during the year. The home visits by the nurses were made more regularly and more frequently than the mothers' visits with the baby to the center. In only 62 cases did the mother pay one or more visits to the center and have no home visits from the nurse.

One-half the babies who were reached by infant-welfare work received supervision before the end of the first month, and more than one-third began receiving it during the second or third months. Over 80 per cent of all these infants who received supervision before the end of the third month were breast fed when it began, approximately the same proportion as in the entire group of babies in Baltimore. But among the 392 babies whose supervision began at some time between the beginning of the fourth month and the end of the ninth month, artificial feeding was markedly more prevalent than in the entire group of infants.

APPENDIX VII.—TABLES.

TABLE 1.—*Infant mortality rates in the United States birth-registration area, in certain foreign countries, in Baltimore (selected group) and certain foreign cities, and in cities (population 100,000 or more) in the United States birth-registration area, 1916.*

Area.	Infant mortality rate.	City.	Infant mortality rate.
United States birth-registration area.....	101	Baltimore (selected group).....	103
Countries with more favorable rates:		Foreign cities with more favorable rates:	
Scotland.....	97	Edinburgh.....	100
England and Wales.....	91	London.....	89
The Netherlands.....	85	Melbourne.....	86
Switzerland.....	178	Adelaide.....	83
Australia.....	70	Christiana.....	80
Norway.....	264	Geneva.....	73
New Zealand.....	51	Sidney.....	68
		Wellington.....	65
		Auckland.....	59
		Amsterdam.....	58
		Zurich.....	55

CITIES IN UNITED STATES BIRTH-REGISTRATION AREA.¹

City.	Infant mortality rate.	City.	Infant mortality rate.	City.	Infant mortality rate.
Fall River.....	173	Providence.....	110	Albany.....	97
Lowell.....	146	Bridgeport.....	105	Springfield, Mass.....	95
New Bedford.....	139	Washington.....	106	New York.....	93
Scranton.....	131	White.....	83	White.....	92
Reading.....	125	Colored.....	158	Colored.....	169
Baltimore.....	122	Boston.....	105	Cambridge.....	91
White.....	104	White.....	104	New Haven.....	88
Colored.....	219	Colored.....	193	Lynn.....	87
Lawrence.....	116	Philadelphia.....	105	Rochester, N. Y.....	86
Pittsburgh.....	115	White.....	102	Minneapolis.....	82
White.....	112	Colored.....	160	Grand Rapids.....	75
Colored.....	177	Hartford.....	101	St. Paul.....	68
Buffalo.....	114	Worcester.....	101		
Detroit.....	112	Syracuse.....	100		

¹ Annuaire Statistique de la Suisse.

² Compiled from Annuaire Statistique de la Norvège, 1919.

³ Birth Statistics, 1916, U. S. Bureau of the Census.

TABLE 2.—*Legitimacy of birth, inclusion in and exclusion from, and reason for exclusion from detailed study; total registered births¹ in Baltimore in 1915.²*

Inclusion or exclusion, reason for exclusion, and legitimacy of birth.	Total births. ³	Miscarriages.	Still-births.	Infant deaths.	Live births.
Total registered.....	14,636	541	618	1,551	12,477
Legitimate.....	13,484	474	488	1,270	12,022
Included in detailed analysis.....	11,613	418	398	1,117	10,297
Excluded from detailed analysis.....	1,871	56	90	153	1,725
Nonresident hospital cases.....	330	11	30	22	289
Other nonresident cases.....	61	7	5	7	49
Information not available.....	24	1	1	11	23
Not located or moved from city.....	1,496	38	54	113	1,364
Illegitimate.....	1,124	63	108	281	955
Legitimacy not reported (foundlings).....	28	5	22	.....	.....

¹ Includes miscarriages.

² See Appendix II, p. 189, for discussion of exclusions.

TABLE 3.—Ward of residence, by color and nationality of mother; scheduled legitimate live births in Baltimore in 1915.¹

Color and nationality of mother.	Live births.																								
	Ward of residence.																								
	Total.	1	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Total.....	10,797	790	620	627	215	396	598	649	598	498	331	145	409	449	289	598	417	252	269	381	606	447	261	351	605
White mothers.....	9,492	786	609	616	174	317	544	577	576	465	305	74	348	443	130	683	332	68	204	331	591	407	203	319	605
Native.....	6,739	538	259	78	70	59	966	432	507	498	214	53	323	416	93	416	307	38	144	283	503	348	102	276	447
Foreign born.....	2,753	228	350	538	104	288	178	145	49	37	91	21	26	27	37	52	25	30	60	48	88	59	101	43	158
Jewish.....	961	7	69	275	21	180	124	27	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Polish.....	625	168	279	115	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Italian.....	412	16	4	133	88	75	6	23	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
German.....	318	18	8	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Irish.....	132	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
English, Scotch, and English-Canadian.....	107	3	1	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgian.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lithuanian.....	98	14	6	8	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other.....	1,305	4	11	11	41	79	52	72	22	31	26	71	61	6	159	130	85	184	65	59	15	40	58	32	.....
Colored mothers.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ All subsequent tables, unless otherwise specified, are based on the scheduled group of legitimate births occurring in Baltimore during 1915.

TABLE 4.—Sanitary condition of dwelling, by ward of residence; infants born in 1915 who lived at least two weeks in dwellings studied.

Sanitary condition of dwelling.	Infants born in 1915 who lived at least 2 weeks in dwellings studied.																								
	Ward of residence.																								
	Total.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Total.....	10,396	764	598	601	207	380	572	621	570	494	317	137	394	434	266	577	405	228	257	361	573	431	260	341	578
Water supply:	10,288	754	597	601	207	380	572	621	570	476	317	137	392	426	266	569	398	228	257	360	560	431	250	341	578
City.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ward.....	33	1	.....	.....	.....	.....	.....	.....	.....	6	.....	.....	1	.....	.....	6	3	.....	1	.....	11	.....	.....	.....	.....

Location of water:	Per cent distribution.											
	9	6	5	4	3	2	1	2	3	1	3	
Springs												
No water												
Dwelling:												
Hall	9,994	715	566	560	200	374	560	619	369	466	314	137
Yard	144	27	25	38	7	4	3	2	3	3	3	3
No water	187	12	7	3		2	1		1	15		
Bath:												
Not reported	3	8										
Bath:	6,111	318	128	99	92	139	373	497	512	395	194	89
No bath	4,215	436	469	500	115	241	199	123	56	89	122	48
Not reported	10	1		2				1			1	
Sewer connection:												
Toilet not connected	7,960	472	582	592	205	364	517	614	511	317	312	134
Toilet not connected	2,364	279	14	8	2	16	55	6	59	166	5	3
No toilet	2											
Not reported	10	3	2	1						1		
Bath:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Bath	39.1	42.2	21.4	16.5	44.4	36.8	65.2	80.0	89.8	81.6	61.2	65.0
No bath	40.8	57.8	78.4	83.2	55.6	63.4	34.5	19.8	9.8	18.4	38.5	35.0
Not reported	.1		.2	.3			.2	.4			.3	
Sewer connection:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Toilet connected	77.0	62.6	97.3	98.5	99.0	95.8	90.4	98.9	89.6	65.5	98.4	97.8
Toilet not connected	22.9	37.0	2.3	1.3	1.0	4.2	9.6	1.0	10.4	34.3	1.6	2.2
No toilet												
Not reported	.1	.4	.3	.2			.2			.2		

¹ Not shown when less than one-tenth of 1 per cent.

TABLE 5.—Earnings of father, by ward of residence and color of mother; live births in 1915.

Earnings of father and color of mother.	Live births in 1915.																									
	Ward of residence.																									
	Total.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
All mothers.....	10,797	790	620	627	215	396	598	649	598	496	331	145	409	449	289	598	417	252	260	381	606	447	261	351	605	
Earnings of father:																										
Under \$450.....	1,544	93	143	186	46	105	67	57	49	33	49	34	37	25	58	54	49	98	48	43	33	61	70	50	56	
\$450-\$549.....	1,449	121	114	133	32	97	75	72	41	48	41	48	28	33	47	65	27	41	26	41	25	42	67	45	51	87
\$550-\$649.....	1,680	146	136	196	33	54	90	90	83	50	46	51	64	28	52	53	30	23	26	33	63	80	40	50	108	
\$650-\$849.....	2,417	209	121	113	37	54	151	166	167	102	76	13	64	28	70	30	91	74	48	39	184	125	50	93	192	
\$850-\$1,049.....	1,593	124	51	33	10	43	99	126	109	63	69	13	62	78	21	37	60	21	37	51	133	65	25	55	86	
\$1,050-\$1,249.....	1,661	30	12	13	7	9	29	49	48	52	13	2	37	39	10	52	51	7	18	46	61	18	6	18	24	
\$1,250-\$1,449.....	419	21	9	11	7	3	34	29	28	22	12	4	18	17	15	43	35	3	15	16	33	10	4	12	21	
\$1,450-\$1,849.....	371	6	0	6	6	11	14	17	19	20	12	2	24	27	12	27	15	3	14	8	30	5	2	4	8	
\$1,850-\$2,249.....	133	5	3	5	1	4	6	2	4	4	1	1	13	10	7	28	14	3	3	3	7	4	3	2	1	
\$2,250-\$2,849.....	185	7	3	5	1	4	2	2	4	5	2	19	7	28	6	1	3	1	3	3	5	5	3	2	1	
\$2,850 and over.....	197	5	11	22	5	8	6	7	6	5	2	10	40	25	13	37	9	7	6	9	5	7	9	5	5	
No earnings.....	207	7	11	22	9	4	11	12	7	11	5	10	4	11	4	10	9	5	7	9	6	8	8	7	15	
Not reported.....	214	12	11	8	9	4	11	12	7	11	1	11	10	6	9	14	9	11	13	7	6	8	2	7	15	
White mothers.....	9,492	786	659	616	174	317	544	577	576	465	305	74	348	443	130	498	332	68	204	331	591	407	203	319	605	
Earnings of fathers:																										
Under \$450.....	1,037	90	139	179	29	75	51	42	39	23	34	3	15	23	10	9	9	11	21	24	30	46	46	33	56	
\$450-\$549.....	1,083	121	109	133	23	68	57	45	62	45	45	5	16	32	9	21	8	2	21	40	33	56	26	44	87	
\$550-\$649.....	1,337	146	134	190	28	43	82	80	77	46	46	8	35	62	7	34	28	6	22	47	63	73	34	46	108	
\$650-\$849.....	2,206	209	121	117	33	51	146	161	164	104	74	8	60	73	20	79	61	15	43	82	133	120	45	62	192	
\$850-\$1,049.....	1,590	124	51	33	25	43	99	121	109	125	58	11	60	73	18	68	68	16	35	51	133	63	24	55	86	
\$1,050-\$1,249.....	651	30	12	13	10	7	29	40	48	51	13	2	37	39	12	62	49	4	18	45	61	18	8	18	24	
\$1,250-\$1,449.....	414	21	9	11	7	3	34	29	28	22	12	2	16	17	15	42	35	3	12	16	33	10	4	12	21	
\$1,450-\$1,849.....	365	17	6	6	6	11	14	17	19	20	12	1	22	27	12	66	36	2	14	8	30	5	2	4	8	
\$1,850-\$2,249.....	138	5	3	5	1	4	6	2	4	4	1	8	13	10	7	24	14	1	3	3	7	4	2	2	1	
\$2,250-\$2,849.....	94	7	3	5	1	1	4	2	3	3	1	1	7	6	3	28	6	1	3	4	5	3	2	1	1	
\$2,850 and over.....	166	7	11	21	2	5	7	13	10	4	6	2	10	40	25	13	9	2	2	3	5	7	6	3	1	
No earnings.....	138	4	11	21	8	9	9	10	7	10	1	3	5	4	3	1	3	2	2	5	5	8	2	6	15	
Not reported.....	173	12	11	8	7	3	9	10	7	10	1	8	9	6	4	5	7	4	10	6	5	8	2	6	15	
Colored mothers.....	1,305	4	11	11	41	79	52	72	22	31	26	71	61	6	159	130	85	184	65	50	15	40	58	32	.....
Earnings of father:																										
Under \$450.....	897	3	4	7	17	30	10	15	10	10	15	31	22	2	48	45	40	87	37	19	3	15	24	17	.....
\$450-\$549.....	356	.....	5	2	9	20	18	27	3	11	3	24	12	1	38	35	19	39	20	15	9	11	10	7	.....

152	2	5	11	0	10	6	4	5	9	2	21	18	6	17	4	6	7	6	4	
121	.....	1	2	5	5	5	4	2	5	5	1	19	12	9	20	5	4	1	5	4
35	.....	.....	.....	.....	.....	.....	.....	2	2	2	4	2	3	5	2	1	.....	2	1	.....
10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	1	1	.....	.....	.....	.....	.....	.....
8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
09	1	2	3	2	7	1	1	4	1	0	13	6	3	5	4	1	.....	.....	.....	.....
41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Per cent distribution.

100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0					
14.5	11.8	23.1	20.7	21.4	20.5	11.2	8.8	8.2	6.7	14.8	23.4	9.0	5.6	20.1	9.0	11.8	38.9	17.8	11.3	5.4	13.6	26.8	14.2	9.3	
13.4	15.3	18.4	21.5	14.9	14.9	12.6	11.1	10.9	8.3	14.5	20.0	6.8	7.3	16.3	16.3	9.4	6.5	16.3	15.2	14.4	6.9	15.0	17.2	14.5	14.4
13.8	18.5	21.9	14.4	15.3	13.6	15.3	13.9	13.9	10.1	13.9	3.4	10.5	14.3	9.7	8.7	8.2	9.1	9.7	13.9	10.4	6.9	17.9	15.3	14.2	17.9
22.4	28.5	19.5	18.8	17.2	14.1	25.3	25.6	27.9	21.8	23.0	9.0	16.2	17.4	7.3	13.4	16.8	13.9	17.8	22.6	30.4	21.9	14.5	19.2	26.5	31.7
14.8	15.7	8.2	5.3	12.6	10.9	16.6	19.4	18.2	25.2	18.1	9.0	15.2	8.7	5.5	7.2	8.4	2.8	6.7	12.1	10.1	4.0	4.0	3.1	5.1	4.0
6.1	3.8	1.9	2.1	4.7	2.3	4.9	7.6	8.0	10.3	3.9	1.4	9.0	3.8	5.2	7.2	8.4	1.2	4.5	4.2	6.4	2.2	1.5	3.4	3.5	
3.9	2.7	1.5	1.8	3.3	8	3.7	4.5	4.7	4.4	3.6	2.8	4.4	6.0	4.5	9.5	8.9	1.2	4.2	2.1	5.0	1.1	1.1	1.1	1.3	
3.4	2.2	1.0	1.0	2.8	2.8	2.3	2.6	3.2	2.4	3.3	5.7	3.3	2.2	2.4	4.2	3.4	.4	1.1	1.1	1.7	.....	.....	.....	.....
1.3	6	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.9	6	1.8	3.5	2.3	2.0	1.5	3.1	1.7	1.2	3.0	2.8	1.9	1.6	4.5	6.2	2.2	2.8	2.2	2.4	3.8	.....	.....	.....	.....
2.0	1.5	1.8	4.2	1.0	1.8	1.8	1.8	1.2	2.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

All mothers.
 Earnings of father:
 Under \$50.....
 \$50-\$99.....
 \$100-\$149.....
 \$150-\$199.....
 \$200-\$249.....
 \$250-\$299.....
 \$300-\$349.....
 \$350-\$399.....
 \$400-\$449.....
 \$450-\$499.....
 \$500 and over.....
 No earnings.....
 Not reported.....

TABLE 6.— *Monthly rental, by ward of residence; infants born in 1915 who lived at least two weeks in rented dwellings studied.*

Ward of residence.	Total infants.	Infants who lived at least 2 weeks in dwellings of specified monthly rental.										Free.		Rental not reported.			
		Under \$5.		\$5, under \$10.		\$10, under \$15.		\$15, under \$25.		\$25, under \$50.		\$50 and over.		Free.		Rental not reported.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total	7,300	350	4.8	2,579	35.3	2,324	31.8	1,180	16.2	331	4.5	44	0.6	95	1.3	397	5.4
1.....	429	69	16.1	232	54.1	91	21.2	20	4.7	2	.5	.....	.....	.....	.....	15	3.5
2.....	462	119	25.8	264	57.1	46	10.0	12	2.6	1	.2	.....	.....	.....	.....	12	2.6
3.....	501	65	13.0	302	60.3	92	18.4	7	1.4	3	.6	.....	.....	.....	.....	30	6.0
4.....	181	1	0.6	86	47.5	36	19.9	21	11.6	13	7.2	.....	.....	.....	.....	20	11.0
5.....	318	10	3.1	151	47.5	97	30.5	37	11.6	1	.3	.....	.....	.....	.....	18	5.7
6.....	341	2	0.6	127	37.2	135	39.6	53	15.5	1	.3	.....	.....	.....	.....	20	5.9
7.....	296	5	1.7	86	28.1	126	42.6	51	17.2	6	2.0	.....	.....	.....	.....	13	4.4
8.....	383	1	0.3	106	27.7	183	47.8	76	19.3	3	.8	.....	.....	.....	.....	10	2.5
9.....	274	3	1.1	51	18.6	119	43.4	82	29.9	5	1.8	.....	.....	.....	.....	10	3.6
10.....	256	1	0.4	101	39.5	98	38.3	38	14.1	3	1.2	.....	.....	.....	.....	14	5.5
11.....	118	1	0.8	6	4.2	24	20.3	35	29.7	23	19.5	.....	.....	.....	.....	19	16.1
12.....	268	1	0.4	39	14.6	91	34.0	57	21.3	45	16.8	.....	.....	.....	.....	17	6.3
13.....	329	11	3.3	79	24.0	112	34.0	67	20.4	26	7.9	.....	.....	.....	.....	16	4.9
14.....	202	2	1.0	28	13.9	47	23.3	49	24.3	45	22.3	.....	.....	.....	.....	24	11.9
15.....	356	6	1.7	42	11.8	91	25.6	115	32.3	74	20.8	.....	.....	.....	.....	20	5.6
16.....	247	1	0.4	52	21.1	58	23.5	92	37.2	28	11.3	.....	.....	.....	.....	12	4.9
17.....	193	2	1.0	31	16.1	51	26.4	71	36.8	18	9.3	.....	.....	.....	.....	18	9.3
18.....	274	1	0.4	66	24.1	75	27.4	36	13.1	8	2.9	.....	.....	.....	.....	23	8.4
19.....	368	3	0.8	89	24.2	117	31.8	42	11.5	13	3.5	.....	.....	.....	.....	6	1.6
20.....	346	11	3.2	145	41.9	171	49.7	112	32.3	9	2.6	.....	.....	.....	.....	5	1.4
21.....	215	5	2.3	102	47.4	144	66.5	24	11.2	2	.9	.....	.....	.....	.....	18	8.3
22.....	215	5	2.3	102	47.4	144	66.5	24	11.2	2	.9	.....	.....	.....	.....	5	2.3
23.....	289	5	1.7	142	49.1	99	34.3	31	10.7	1	.3	.....	.....	.....	.....	8	2.8
24.....	409	21	5.1	170	41.6	146	35.7	33	8.1	1	.3	.....	.....	.....	.....	33	8.1

Tenure of dwelling, by ward of residence; infants born in 1915 who lived at least two weeks in dwellings studied.

Ward of residence.	Total infants.	Infants who lived at least 2 weeks in dwellings of specified tenure.							Tenure not reported.
		Dwelling owned.		Dwelling rented.		Family boarding.			
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.		
	10,336	2,879	27.9	7,300	70.6	156	1.5	1	
	754	322	42.7	429	56.9	3	.4		
	598	136	22.7	462	77.3				
	601	97	16.1	501	83.4	3	.5		
	207	16	7.7	181	87.4	10	4.8		
	380	55	14.5	318	83.7	7	1.8		
	572	225	39.3	341	59.6	6	1.0		
	621	310	49.9	296	47.7	15	2.4		
	570	169	29.6	393	68.9	7	1.2	1	
	484	192	39.7	274	56.6	18	3.7		
	317	61	19.2	256	80.8				
	137	16	11.7	118	86.1	3	2.2		
	394	114	28.9	268	68.0	12	3.0		
	434	92	21.2	329	75.8	13	3.0		
	266	58	21.8	202	75.9	6	2.3		
	577	214	37.1	356	61.7	7	1.2		
	405	153	37.8	247	61.0	5	1.2		
	228	29	12.7	193	84.6	6	2.6		
	257	37	14.4	215	83.7	5	1.9		
	361	81	22.4	274	75.9	6	1.7		
	573	180	31.4	388	67.7	5	.9		
	431	83	19.3	346	80.3	2	.5		
	250	28	11.2	215	86.0	7	2.8		
	341	51	15.0	289	84.8	1	.3		
	578	160	27.7	409	70.8	9	1.6		

Tenure of dwelling, by color and nationality of mother; infants born in 1915 who lived at least two weeks in dwellings studied.

Nationality of mother.	Total infants.	Infants who lived at least 2 weeks in dwellings of specified tenure.										Tenure not reported.
		Dwelling owned.						Dwelling rented.		Family boarding.		
		Total.		By parents.		By others in household.						
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
	10,336	2,879	27.9	2,367	22.9	512	5.0	7,300	70.6	156	1.5	1
White	6,464	1,991	30.8	1,541	23.8	450	7.0	4,351	67.3	121	1.9	1
	2,649	814	30.7	785	29.6	29	1.1	1,820	68.7	15	.6	
English, Scotch, English-Canadian	931	241	25.9	237	25.5	4	.4	684	73.5	6	.6	
	597	174	29.1	168	28.1	6	1.0	423	70.9			
	394	97	24.6	93	23.6	4	1.0	296	75.1	1	.3	
	308	144	46.8	135	43.8	9	2.9	163	52.9	1	.3	
Irish	127	33	26.0	32	25.2	1	.8	92	72.4	2	1.6	
	101	74	73.3	71	70.3	3	3.0	27	26.7			
Irish-Canadian	96	20	20.8	19	19.8	1	1.0	72	75.0	4	4.2	
	95	31	32.6	30	31.6	1	1.1	63	66.3	1	1.1	
	1,223	74	6.1	41	3.4	33	2.7	1,120	92.3	20	1.6	

93 Irish, 18 English, 8 Scotch, and 8 English-Canadian.

As in prenatal work, the organizations had been more successful in reaching colored families and foreign-born Jewish families than any others. Nearly two-thirds (60.5 per cent) of the colored babies and nearly one-half (45.1 per cent) of the babies of foreign-born Jewish mothers had supervision from welfare agencies. The actual number of infants who had such supervision was greatest among the native white families (1,302) but the total number of native white families was large and the percentage having care (20 per cent) was lower in this group than in any other. Even when families with similar earnings are compared, it appears that in each group except that in which fathers' earnings were from \$450 to \$549 fewer infants, relatively, of native white mothers than of foreign-born white mothers had supervision from infant-welfare agencies.

Among the Poles and Italians the agencies were more successful in reaching families where the mother could speak English than families where the mother could not speak English, but the reverse was true in the foreign-born Jewish families.

Two-thirds of the infants who had supervision at any time within 12 months after birth were still having it at the end of the year. About 5 per cent died within the year; less than 1 per cent were discharged to a private physician or transferred from one agency to another without further record of the case; about 6 per cent were dropped by the agency because the mother would not cooperate. But the principal loss of cases occurred in families that moved and were not followed to their new addresses; 18.8 per cent of the infants who had had supervision were not having it at the end of the year because their families had moved.

TABLE XVI.—Prevalence of supervision from infant-welfare agencies, by color and nationality of mother.

Color and nationality of mother.	Infants who survived 2 weeks.		
	Total.	Having supervision from infant-welfare agencies.	
		Number.	Per cent.
Total.....	10,397	2,935	28.2
Native white.....	6,498	1,302	20.0
Foreign-born white.....	2,660	883	33.2
Jewish.....	937	423	45.1
Polish.....	598	134	22.4
Italian.....	398	128	32.3
All other.....	729	198	27.2
Colored.....	1,239	750	60.5

In every ward, as in the city as a whole, a higher percentage of colored than of white infants had supervision. The need of supervision was of course greatest in the poorest wards, but at the time of this study the work seems to have been more developed or more successful in finding response in certain poor wards than in others. In five of the six wards where the father's median earnings were lowest the percentage having supervision was well above the average for the city (28.2), when all infants are considered together. But when the

white infants and the colored infants are considered separately two of these wards (second and seventeenth) did not show high percentages having supervision. In the seventeenth ward, the number having supervision was 40.9 per cent of the total. But of the white infants in this ward only 7.9 per cent had supervision, as compared with the average, 23.9, for white infants, and of the colored infants, who comprised three-fourths of all the infants in the ward, only 53.3 per cent had supervision, as compared with the average, 60.5, for colored infants. In the second ward, where less than 2 per cent of the infants were colored and where very poor white families predominated, the percentage having supervision (23.2) was approximately the average for all white families, rich and poor, throughout the city. The white babies in the fifth ward had the highest percentage for white infants; 48.1 per cent of the total had supervision.

TABLE XVII.—Prevalence of supervision from infant-welfare agencies, by color of mother, and ward of residence.

Ward of residence and median earnings of father.	Per cent ¹ of infants who survived 2 weeks having supervision from infant-welfare agencies.		
	Total mothers.	White mothers.	Colored mothers.
Total.....	28.2	23.9	60.5
Median earnings under \$650:			
Ward 5.....	54.8	48.1	82.7
Ward 22.....	47.0	39.2	73.7
Ward 3.....	41.2	40.6	.....
Ward 4.....	41.1	35.5	.....
Ward 17.....	40.9	7.9	53.3
Ward 2.....	23.2	22.3	.....
Median earnings \$650-\$849:			
Ward 18.....	39.1	31.2	66.1
Ward 21.....	38.0	35.5	.....
Ward 23.....	36.7	30.9	.....
Ward 24.....	36.1	36.1	.....
Ward 10.....	29.8	25.8	.....
Ward 1.....	27.5	27.3	.....
Ward 14.....	27.5	12.4	39.5
Ward 6.....	27.1	22.0	.....
Ward 11.....	25.9	10.0	42.0
Ward 13.....	22.7	22.6	.....
Ward 8.....	22.6	20.7	.....
Ward 7.....	22.4	16.5	71.6
Ward 19.....	22.4	18.9	.....
Ward 20.....	18.1	17.0	.....
Median earnings \$850 and over:			
Ward 12.....	21.0	12.8	65.6
Ward 15.....	17.2	5.1	60.2
Ward 9.....	15.5	11.9	.....
Ward 16.....	13.1	4.6	46.9

¹ Not shown where base is less than 50.

Of the 2,935 infants reached by infant-welfare work, more than half did not receive supervision regularly, but were taken to the centers or were visited by the nurses only at irregular intervals. Over one-third, however, had each an average of a visit a month—either a visit from a nurse or a consultation at the center—from the time the supervision was commenced until the end of the year. And 120 babies, or 4.1 per cent of these reached by the infant-welfare work, had each an average of a visit from the nurse and a visit to the center during each month from the time the baby came under the

supervision of the organization until the end of the year. Nine babies each averaged three or four visits a month, including at least one to the center and one home visit of the nurse in each month during the period from the commencement of care until the end of the first year.

Of the total number of infants who were reached by infant-welfare work, over half, 55.8 per cent, were never taken to the infant-welfare center; 13.8 per cent were taken once; 14.7 per cent were taken from two to four times; 10.1 per cent were taken from 5 to 10 times; and only 5.3 per cent were taken more than 10 times during the year. The home visits by the nurses were made more regularly and more frequently than the mothers' visits with the baby to the center. In only 62 cases did the mother pay one or more visits to the center and have no home visits from the nurse.

One-half the babies who were reached by infant-welfare work received supervision before the end of the first month, and more than one-third began receiving it during the second or third months. Over 80 per cent of all these infants who received supervision before the end of the third month were breast fed when it began, approximately the same proportion as in the entire group of babies in Baltimore. But among the 392 babies whose supervision began at some time between the beginning of the fourth month and the end of the ninth month, artificial feeding was markedly more prevalent than in the entire group of infants.

APPENDIX VII.—TABLES.

TABLE 1.—*Infant mortality rates in the United States birth-registration area, in certain foreign countries, in Baltimore (selected group) and certain foreign cities, and in cities (population 100,000 or more) in the United States birth-registration area, 1916.*

Area.	Infant mortality rate.	City.	Infant mortality rate.
United States birth-registration area.....	101	Baltimore (selected group).....	103
Countries with more favorable rates:		Foreign cities with more favorable rates:	
Scotland.....	97	Edinburgh.....	100
England and Wales.....	91	London.....	89
The Netherlands.....	85	Melbourne.....	86
Switzerland.....	78	Adelaide.....	83
Australia.....	70	Christiania.....	80
Norway.....	64	Geneva.....	73
New Zealand.....	51	Sidney.....	68
		Wellington.....	65
		Auckland.....	59
		Amsterdam.....	58
		Zurich.....	55

CITIES IN UNITED STATES BIRTH-REGISTRATION AREA.¹

City.	Infant mortality rate.	City.	Infant mortality rate.	City.	Infant mortality rate.
Fall River.....	173	Providence.....	110	Albany.....	97
Lowell.....	146	Bridgeport.....	106	Springfield, Mass.....	95
New Bedford.....	139	Washington.....	106	New York.....	93
Scranton.....	131	White.....	83	White.....	92
Reading.....	125	Colored.....	158	Colored.....	169
Baltimore.....	122	Boston.....	105	Cambridge.....	91
White.....	104	White.....	104	New Haven.....	88
Colored.....	219	Colored.....	193	Lynn.....	87
Lawrence.....	116	Philadelphia.....	105	Rochester, N. Y.....	86
Pittsburgh.....	115	White.....	102	Minneapolis.....	82
White.....	113	Colored.....	160	Grand Rapids.....	75
Colored.....	177	Hartford.....	101	St. Paul.....	68
Buffalo.....	114	Worcester.....	101		
Detroit.....	112	Syracuse.....	100		

¹ Annuaire Statistique de la Suisse.

² Compiled from Annuaire Statistique de la Norvège, 1919.

³ Birth Statistics, 1916, U. S. Bureau of the Census.

TABLE 2.—*Legitimacy of birth, inclusion in and exclusion from, and reason for exclusion from detailed study; total registered births¹ in Baltimore in 1915.²*

Inclusion or exclusion, reason for exclusion, and legitimacy of birth.	Total births ¹	Miscarriages.	Stillbirths.	Infant deaths.	Live births.
Total registered.....	14,636	541	618	1,551	13,477
Legitimate.....	13,484	474	488	1,270	12,022
Included in detailed analysis.....	11,613	418	398	1,117	10,797
Excluded from detailed analysis.....	1,871	56	90	153	1,725
Nonresident hospital cases.....	320	11	20	22	289
Other nonresident cases.....	61	7	5	7	49
Information not available.....	24	.....	1	11	23
Not located or moved from city.....	1,466	38	64	113	1,364
Illegitimate.....	1,124	61	108	281	955
Legitimacy not reported (foundlings).....	28	6	22	.....	.....

¹ Includes miscarriages.

² See Appendix II, p. 189, for discussion of exclusions.

No water.	6	715	566	560	374	560	519	560	466	314	137	387	408	262	563	393	221	255	340	550	410	242	310	555
Dwelling...	9,994	27	25	38	7	3	2	1	3	3	3	3	1	4	5	4	1	4	1	1	5	4	1	
Hall...	144	12	7	3	2	1	15																	
Yard...	157	12	7	3	2	1	15																	
No water Not reported	8																							
Bath:																								
Bath...	6,111	318	128	99	92	139	373	497	512	305	194	89	357	257	212	405	336	123	133	246	221	79	143	271
No bath...	4,215	436	469	300	115	241	190	123	56	89	122	48	177	54	82	69	105	124	115	151	210	170	196	307
Not reported.	10																							
Sewer connec- tion:																								
Toilet con- nected...	7,960	472	582	592	205	364	517	614	511	317	312	313	191	260	451	308	197	220	234	296	178	263	198	261
Toilet not connected.	2,364	279	14	8	2	16	55	6	59	166	5	81	243	6	126	95	31	37	126	277	253	16	143	317
No toilet.	2																							
Not reported.	10	3	2	1																				

Per cent distribution.¹

Bath...	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Bath...	59.1	42.2	21.4	16.5	44.4	36.6	65.2	80.0	89.8	81.6	61.2	65.0	85.5	59.2	79.7	85.8	83.0	53.9	51.8	68.1	73.6	51.3	31.6	41.9	46.9
No bath...	40.8	57.8	78.4	83.2	55.6	63.4	34.8	19.8	9.8	18.4	38.5	35.0	14.5	40.8	20.3	14.2	17.0	46.1	48.2	31.9	26.4	48.7	68.0	57.5	53.1
Not reported.	.1		.2	.3			.2	.4		.3												.4	.6		
Sewer connec- tion:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Toilet con- nected...	77.0	62.6	97.3	98.5	99.0	95.8	90.4	98.9	89.6	95.5	96.4	97.4	44.0	97.7	78.2	76.0	86.4	85.6	64.8	51.7	41.3	93.2	58.1	45.2	
Toilet not connected.	22.9	37.0	3.3	1.3	1.0	4.2	9.6	1.0	10.4	34.3	1.6	2.2	20.6	56.0	2.3	21.8	23.5	13.6	14.4	34.9	48.3	58.7	6.4	41.9	54.8
No toilet.																									
Not reported.	.1	.4	.3	.2			.2	.2	.2	.2	.2						.2	.2	.3			.4			

¹ Not shown when less than one-tenth of 1 per cent.

INFANT MORTALITY, BALTIMORE, MD.

TABLE 6.—Monthly rental, by ward of residence; infants born in 1915 who lived at least two weeks in rented dwellings attended.

Ward of residence.	Total infants.	Infants who lived at least 2 weeks in dwellings of specified monthly rental.												Free.		Rental not reported.	
		Under \$5.		\$5, under \$10.		\$10, under \$15.		\$15, under \$25.		\$25, under \$50.		\$50 and over.		Free.		Rental not reported.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total.....	7,300	350	4.8	2,579	35.3	2,324	31.8	1,190	16.2	331	4.5	44	0.6	96	1.3	397	5.4
1.....	429	69	16.1	232	54.1	91	21.2	20	4.7	2	.5					16	3.6
2.....	501	119	23.8	264	52.7	46	10.0	12	2.6	1	.2					12	2.6
3.....	181	65	33.0	302	60.3	92	18.4	7	1.4	3	.6					30	6.0
4.....	318	1	0.3	96	30.2	36	11.3	21	6.6	13	4.1					20	6.3
5.....	341	10	3.1	151	44.3	97	28.4	37	10.9	1	.3					18	5.3
6.....	296	2	0.7	127	42.9	135	45.6	53	18.0	1	.3					20	6.7
7.....	383	5	1.3	106	27.7	126	32.9	51	13.3	6	1.6	1	.3			13	3.4
8.....	274	1	0.4	51	18.6	119	43.4	76	27.7	3	.8					10	3.6
9.....	256	1	0.4	101	39.5	98	38.3	36	14.1	6	2.4					14	5.5
10.....	118	1	0.8	6	5.1	24	20.3	35	29.7	23	19.5					19	16.1
11.....	268	1	0.4	39	14.6	91	34.0	33	12.3	5	1.8					17	6.3
12.....	329	11	3.3	79	24.0	112	34.0	57	17.3	45	13.7					16	4.9
13.....	242	2	0.8	28	11.6	47	19.4	49	20.2	26	10.7					24	9.9
14.....	356	6	1.7	52	14.6	91	25.6	115	32.3	74	21.1					30	8.4
15.....	247	1	0.4	43	17.4	58	23.5	92	37.2	28	11.3					12	4.9
16.....	183	2	1.1	31	16.9	75	41.0	36	19.7	18	9.8					18	9.8
17.....	215	1	0.5	66	30.7	117	54.4	36	16.7	8	3.7					6	2.8
18.....	274	3	1.1	89	32.5	117	42.7	42	15.3	13	4.7					23	8.4
19.....	388	3	0.8	84	21.6	171	44.1	112	28.9	9	2.3					6	1.6
20.....	346	11	3.2	145	41.9	144	41.6	21	6.1	2	.6					18	5.2
21.....	215	5	2.3	102	47.4	65	30.2	24	11.2	1	.5					16	7.4
22.....	289	5	1.7	142	49.1	99	34.3	31	10.7	1	.3					8	2.8
23.....	409	21	5.1	170	41.6	116	28.4	33	8.1							33	8.1

—Tenure of dwelling, by ward of residence; infants born in 1915 who lived at least two weeks in dwellings studied.

Ward of residence.	Total infants.	Infants who lived at least 2 weeks in dwellings of specified tenure.						Tenure not reported.
		Dwelling owned.		Dwelling rented.		Family boarding.		
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
.....	10,336	2,879	27.9	7,300	70.6	156	1.5	1
.....	754	322	42.7	429	56.9	3	.4	.....
.....	598	136	22.7	462	77.3	.....	.....	.....
.....	601	97	16.1	501	83.4	3	.5	.....
.....	207	16	7.7	181	87.4	10	4.8	.....
.....	380	55	14.5	318	83.7	7	1.8	.....
.....	572	225	39.3	341	59.6	6	1.0	.....
.....	621	310	49.9	296	47.7	15	2.4	.....
.....	570	169	29.6	393	68.9	7	1.2	1
.....	494	192	38.7	274	55.6	18	3.7	.....
.....	317	61	19.2	256	80.8	.....	.....	.....
.....	137	16	11.7	118	86.1	3	2.2	.....
.....	394	114	28.9	268	68.0	12	3.0	.....
.....	434	92	21.2	329	75.8	13	3.0	.....
.....	266	58	21.8	202	75.9	6	2.3	.....
.....	577	214	37.1	356	61.7	7	1.2	.....
.....	405	153	37.8	247	61.0	5	1.2	.....
.....	228	29	12.7	193	84.6	6	2.6	.....
.....	257	37	14.4	215	83.7	5	1.9	.....
.....	361	81	22.4	274	75.9	6	1.7	.....
.....	573	180	31.4	388	67.7	5	.9	.....
.....	431	83	19.3	346	80.3	2	.5	.....
.....	250	28	11.2	215	86.0	7	2.8	.....
.....	341	51	15.0	289	84.8	1	.3	.....
.....	578	160	27.7	409	70.8	9	1.6	.....

—Tenure of dwelling, by color and nationality of mother; infants born in 1915 who lived at least two weeks in dwellings studied.

Nationality of mother.	Total infants.	Infants who lived at least 2 weeks in dwellings of specified tenure.										Tenure not reported.
		Dwelling owned.						Dwelling rented.		Family boarding.		
		Total.		By parents.		By others in household.		Number.	Per cent.	Number.	Per cent.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.					
.....	10,336	2,879	27.9	2,367	22.9	512	5.0	7,300	70.6	156	1.5	1
.....	6,464	1,991	30.8	1,541	23.8	450	7.0	4,351	67.3	121	1.9	1
.....	2,649	814	30.7	785	29.6	29	1.1	1,820	68.7	15	.6	.....
.....	931	241	25.9	237	25.5	4	.4	684	73.5	6	.6	.....
.....	597	174	29.1	168	28.1	6	1.0	423	70.9	.....	.....	.....
.....	394	97	24.6	93	23.6	4	1.0	296	75.1	1	.3	.....
.....	398	144	36.2	135	33.9	9	2.9	168	42.2	1	.3	.....
.....	127	33	26.0	32	25.2	1	.8	92	73.4	2	1.6	.....
.....	101	74	73.3	71	70.3	3	3.0	27	26.7	.....	.....	.....
.....	95	29	30.5	19	19.9	1	1.0	72	75.0	4	4.2	.....
.....	95	31	32.6	30	31.6	1	1.1	63	66.3	1	1.1	.....
.....	1,222	74	6.1	41	3.4	33	2.7	1,129	92.3	20	1.6	.....

93 Irish, 18 English, 2 Scotch, and 1 English-Canadian.

TABLE 9.—Tenure of dwelling, by earnings of father; infants born in 1915 who lived at least two weeks in dwellings studied.

Earnings of father.	Total infants.	Infants who lived at least 2 weeks in dwellings of specified tenure.										
		Dwelling owned.						Dwelling rented.		Family boarding.		Tenure not reported.
		Total.		By parents.		By others in household.		Num-ber.	Per cent.	Num-ber.	Per cent.	
		Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.					
Total.....	10,336	2,879	27.9	2,367	22.9	512	5.0	7,300	70.6	156	1.5		1
Under \$450.....	1,457	171	11.7	135	9.3	36	2.5	1,270	87.2	16	1.1	.....
\$450-\$549.....	1,387	202	14.6	161	11.6	41	3.0	1,172	84.5	13	.9	.....
\$550-\$849.....	3,749	907	24.2	703	18.8	204	5.4	2,786	74.3	56	1.5	.....
\$850-\$1,249.....	2,183	911	41.7	762	34.9	149	6.8	1,239	56.8	33	1.5	.....
\$1,250-\$1,849.....	751	375	49.9	333	44.3	42	5.6	361	48.1	15	2.0	.....
\$1,850 and over.....	419	236	56.3	220	52.5	16	3.8	180	43.0	3	.7	.....
No earnings.....	192	23	12.0	14	7.3	9	4.7	153	79.7	16	8.3	.....
Not reported.....	198	54	27.3	39	19.7	15	7.6	139	70.2	4	2.0	1

TABLE 10.—Dwellings in building; infants born in 1915 who lived at least two weeks in dwellings studied.

Dwellings in building.	Infants who lived at least 2 weeks in dwellings studied.		Dwellings in building.	Infants who lived at least 2 weeks in dwellings studied.	
	Number.	Per cent distribution.		Number.	Per cent distribution.
Total.....	10,336	100.0	4.....	196	1.9
1.....	6,972	67.5	5-9.....	218	2.1
2.....	2,051	19.8	10 and over.....	61	.6
3.....	812	7.9	Not reported.....	26	.3

TABLE 11.—Color, nativity, and mother tongue of population in Baltimore and in Continental United States, 1910.¹

Color, nativity, and mother tongue.	Population.		
	Baltimore.		Continental United States.
	Number.	Per cent distribution.	Per cent distribution.
Total.....	558,455	100.0	100.0
Native white:			
Native parentage.....	261,474	46.8	53.8
Foreign or mixed parentage.....	134,870	24.1	28.5
German.....	68,896	12.3	6.6
English and Celtic.....	29,740	5.3	7.3
Yiddish and Hebrew.....	11,567	2.1	.7
Polish.....	10,476	1.9	.8
Bohemian and Moravian.....	4,396	.8	.3
Italian.....	3,497	.6	.9
All other.....	6,306	1.1	4.0
Foreign-born white.....	77,043	13.8	14.5
German.....	25,104	4.5	3.0
English and Celtic.....	10,603	1.9	2.7
Yiddish and Hebrew.....	13,585	2.3	1.1
Polish.....	11,128	2.0	1.0
Bohemian and Moravian.....	3,351	.6	.3
Italian.....	8,048	.9	1.5
All other.....	6,281	1.1	4.0
Negro.....	84,749	15.2	10.7
Other colored.....	849	.1	.3

¹ Thirteenth Census of the United States, Vol. 1, pp. 125, 207, 998-1015.

TABLE 12.—*Years of residence of mother in the United States, by nationality of mother; births¹ in 1915 to foreign-born white mothers.*

Years of residence of mother in the United States.	Births ¹ in 1915 to foreign-born white mothers of specified nationality.								
	Total births. ¹	Jewish.	Polish.	Italian.	German.	Irish, English, Scotch, and English-Canadian. ²	Romanian.	Lithuanian.	All other. ³
Total.....	2,804	1,011	655	440	331	138	112	105	102
Under 5.....	651	188	160	157	48	15	12	22	49
1.....	132	41	31	37	5	3	1	4	10
2.....	186	55	40	40	21	5	3	8	14
3.....	184	65	45	41	12	2	5	7	17
4.....	149	37	44	39	10	5	3	3	8
5-9.....	792	294	174	126	67	24	32	51	24
0-14.....	601	258	114	79	59	32	23	18	18
5-19.....	303	113	73	45	23	25	10	8	6
20 and over.....	535	155	132	33	130	40	34	6	5
Not reported.....	12	3	2		4	2	1		

Total.....	Per cent distribution.								
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5.....	22.8	18.6	24.4	35.7	14.5	10.9	10.7	21.0	48.0
1.....	4.6	4.1	4.7	8.4	1.5	2.2	.9	3.8	9.8
2.....	6.4	5.4	6.1	9.1	6.3	3.6	2.7	7.6	13.7
3.....	6.4	5.4	6.9	9.3	3.6	1.4	4.5	6.7	16.7
4.....	5.1	3.7	6.7	8.9	3.0	3.6	2.7	2.9	7.8
5-9.....	27.4	29.1	26.6	28.6	20.2	17.4	28.6	48.6	23.5
0-14.....	20.8	25.5	17.4	18.0	17.8	23.2	20.5	17.1	17.6
5-19.....	10.5	11.2	11.1	10.2	6.9	18.1	8.9	7.6	5.9
20 and over.....	18.5	15.3	20.2	7.5	39.3	29.0	30.4	5.7	4.9
Not reported.....	.4	.3	.3		1.2	1.4	.9		

¹ Includes miscarriages.

² Includes: 101 Irish, 19 English, 8 Scotch, and 10 English-Canadian.

³ Includes: 24 Russian, 19 Greek, 13 Magyar, 6 Norwegian, 6 Serbian, 5 French, 5 Slovak, 4 Rumanian, 3 Ruthenian, 3 French-Canadian, 3 Dutch, 2 Slavic (n. o. s.), 2 Spanish, 2 Swedish, 1 Arabian, and 1 Danish.

TABLE 13.—*Ability to speak English, by literacy and nationality of mother; births in 1915 to foreign-born white mothers of non-English-speaking nationalities.*

Literacy and nationality of mother.	Births in 1915.				
	Total.	Mothers able to speak English.		Mothers not able to speak English.	
		Number.	Per cent. ¹	Number.	Per cent. ¹
Foreign-born white mothers of non-English-speaking nationalities:					
Literate.....	1,960	1,417	72.3	543	27.7
Illiterate.....	771	771	100.0	0	0.0
Jewish:					
Literate.....	314	261	83.1	53	16.9
Illiterate.....	176	176	100.0	0	0.0
Polish:					
Literate.....	374	127	34.0	247	66.0
Illiterate.....	228	47	20.6	181	79.4
Italian:					
Literate.....	276	191	69.2	85	30.8
Illiterate.....	156	58	37.2	98	62.8
German:					
Literate.....	96	27	28.1	69	71.9
Illiterate.....	21	2	9.5	19	90.5
All other:					
Literate.....	212	177	83.5	35	16.5
Illiterate.....	96	77	80.2	19	19.8

¹ Not shown where less than 100.

TABLE 14.—*Ability to speak English, by years in the United States and nationality of mother; births in 1915 to foreign-born white mothers of non-English-speaking nationalities.*

Nationality of mother.	Births to foreign-born white mothers reporting specified number of years in the United States.								
	Under 5.			5-9.			10 and over.		
	Total.	Unable to speak English.		Total.	Unable to speak English.		Total.	Unable to speak English.	
		Number.	Per cent. ¹		Number.	Per cent.		Number.	Per cent.
Total foreign-born white mothers of non-English-speaking nationalities.....	627	473	75.4	755	339	44.9	1,310	245	18.7
Jewish.....	196	104	55.9	288	48	16.7	514	30	5.8
Polish.....	158	151	95.6	171	134	78.4	312	123	39.4
Italian.....	152	136	89.5	124	84	67.7	150	61	40.7
German.....	48	23	47.9	67	13	19.4	208	11	5.3
All other.....	83	59	71.1	105	60	57.1	126	20	15.9

¹ Not shown where base is less than 50.TABLE 15.—*Literacy of mother, by color and nationality of mother and earnings of father; births in 1915.*

Earnings of father.	Per cent ¹ of births to illiterate mothers.								
	Total.	Color and nationality.							
		Native white.	Foreign-born white.						Colored.
			Total.	Jewish.	Polish.	Italian.	German.	All other.	
Total.....	9.7	1.9	27.5	17.8	44.8	46.0	6.4	22.4	12.2
Under \$450.....	22.6	6.1	43.1	26.2	54.3	62.3	(1)	43.7	14.3
\$450-\$549.....	16.4	5.0	37.5	27.5	48.9	51.6	(1)	25.0	10.9
\$550-\$649.....	11.7	2.7	29.6	19.0	45.6	40.0	6.6	26.6	14.6
\$650-\$849.....	5.9	1.6	17.8	11.8	31.0	30.6	5.3	15.6	10.4
\$850 and over.....	2.6	0.5	11.8	8.8	32.2	29.5	2.1	8.2	4.8
No earnings.....	15.3	.....	50.9	.....	.....	.....	.....	.....	9.5
Not reported.....	7.5	1.3	21.6	.....	.....	.....	.....	.....	.....

¹ Not shown where base is less than 50.TABLE 16.—*Ability of mother to speak English, by earnings of father and nationality of mother; births in 1915 to foreign-born white mothers of non-English-speaking nationalities.*

Earnings of father.	Per cent ¹ of births to mothers unable to speak English, among foreign-born white mothers of specified nationality.					
	All non-English-speaking nationalities.	Jewish.	Polish.	Italian.	German.	All other.
Total.....	39.1	18.4	63.5	66.0	14.4	44.6
Under \$450.....	57.6	33.8	74.4	77.0	.....	68.2
\$450-\$549.....	45.7	18.3	65.2	67.7	.....	.....
\$550-\$649.....	43.1	17.4	59.2	62.0	26.2	.....
\$650-\$849.....	32.5	16.7	56.6	54.1	14.7	33.8
\$850 and over.....	18.9	9.1	52.5	55.7	5.2	20.0
No earnings.....	48.1	.....	.....	.....	.....	.....
Not reported.....	30.0	.....	.....	.....	.....	.....

¹ Not shown where base is less than 50.

TABLE 17.—Occupation group¹ of father, by color and nativity of mother; births in 1915.

Occupation group ¹ of father.	Total births.		Births to mothers of specified color and nativity.				Per cent distribution.	
	Number.	Per cent distribution.	Native white.		Foreign-born white.			Colored.
			Number.	Per cent distribution.	Number.	Per cent distribution.		
Total	11,195	100.0	6,937	100.0	2,837	100.0	1,421	100.0
Group I	1,757	15.7	822	7.5	499	17.6	726	51.8
Group II	3,435	31.6	1,838	17.2	1,170	41.6	468	32.9
Group III	2,691	24.1	2,043	28.3	470	16.6	473	33.1
Group IV	2,381	21.3	1,523	26.6	503	17.9	43	3.0
Group V	708	6.3	549	7.9	134	4.7	23	1.6
Not specified	201	1.8	68	1.2	44	1.6	72	5.1
Over 100 not reported	17	.2	8	.1	4	.1	5	.4
Over 100 not reported	7	.1	4	.1	2	.1	1	.1

¹ For grouping see p. 36.

TABLE 18.—*Infant mortality and stillbirth rates, by earnings of father, and color and nationality of mother; births¹ in 1915.*

Earnings of father and color and nationality of mother.	Total births. ¹	Miscarriages.		Births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ²
		Num-ber.	Per cent. ³		Num-ber.	Per cent. ³			
All mothers.....	11,613	418	3.6	11,195	398	3.6	10,797	1,117	102.5
Earnings of father:									
Under \$450.....	1,690	75	4.4	1,615	71	4.4	1,544	262	156.7
\$450-\$549.....	1,574	51	3.2	1,523	74	4.9	1,449	171	118.9
\$550-\$649.....	1,590	47	3.0	1,543	54	3.5	1,489	162	108.5
\$650-\$849.....	2,575	85	3.3	2,490	73	2.9	2,417	232	96.0
\$850-\$1,049.....	1,696	56	3.3	1,640	45	2.7	1,595	114	71.5
\$1,050-\$1,249.....	705	27	3.8	678	17	2.5	661	44	66.6
\$1,250-\$1,449.....	449	19	4.2	430	11	2.6	419	31	74.0
\$1,450-\$1,849.....	397	17	4.3	380	9	2.4	371	32	85.3
\$1,850-\$2,249.....	146	3	2.1	143	4	2.8	139	5	35.0
\$2,250-\$2,849.....	103	3	2.9	100	5	5.0	95	3	.....
\$2,850 and over.....	212	7	3.3	205	8	4.0	197	8	40.6
No earnings.....	235	13	5.5	222	15	6.8	207	43	207.7
Not reported.....	241	15	6.2	226	12	5.3	214	30	140.2
White mothers.....	10,104	330	3.3	9,774	282	2.9	9,492	910	95.9
Earnings of father:									
Under \$450.....	1,087	28	2.6	1,059	22	2.1	1,037	159	153.1
\$450-\$549.....	1,165	38	3.3	1,127	34	3.0	1,093	111	101.6
\$550-\$649.....	1,420	41	2.9	1,379	42	3.0	1,337	141	105.5
\$650-\$849.....	2,440	75	3.1	2,365	69	2.9	2,296	218	94.9
\$850-\$1,049.....	1,655	53	3.2	1,602	42	2.6	1,560	108	69.2
\$1,050-\$1,249.....	695	27	3.9	668	17	2.5	651	43	66.1
\$1,250-\$1,449.....	444	19	4.3	425	11	2.6	414	28	67.6
\$1,450-\$1,849.....	391	17	4.3	374	9	2.4	365	32	87.7
\$1,850-\$2,249.....	145	3	2.1	142	4	2.8	138	5	36.2
\$2,250-\$2,849.....	102	3	2.9	99	5	.....	94	3	.....
\$2,850 and over.....	211	7	3.3	204	8	3.9	196	8	40.8
No earnings.....	156	8	5.1	148	10	6.8	138	29	210.1
Not reported.....	193	11	5.7	182	9	4.9	173	25	144.5
Native mothers.....	7,210	273	3.8	6,937	198	2.9	6,739	646	95.9
Earnings of father:									
Under \$450.....	477	17	3.6	460	11	2.4	449	74	164.8
\$450-\$549.....	686	23	3.4	663	19	2.9	644	83	128.9
\$550-\$649.....	971	35	3.6	936	28	3.0	908	98	107.9
\$650-\$849.....	1,840	64	3.5	1,776	50	2.8	1,726	165	95.6
\$850-\$1,049.....	1,328	45	3.4	1,283	32	2.5	1,251	86	68.7
\$1,050-\$1,249.....	591	25	4.2	566	15	2.7	551	40	72.6
\$1,250-\$1,449.....	340	18	5.3	322	8	2.5	314	24	76.4
\$1,450-\$1,849.....	339	16	4.7	323	8	2.5	315	29	92.1
\$1,850-\$2,249.....	115	3	2.6	112	4	3.6	108	5	46.3
\$2,250-\$2,849.....	89	3	.....	86	5	.....	81	3	.....
\$2,850 and over.....	191	7	3.7	184	7	3.8	177	6	33.9
No earnings.....	103	8	7.8	95	7	.....	88	16	.....
Not reported.....	140	9	6.4	131	4	3.1	127	17	133.9
Foreign-born mothers	2,894	57	2.0	2,837	84	3.0	2,753	264	95.9
Earnings of father:									
Under \$450.....	610	11	1.8	599	11	1.8	588	85	144.6
\$450-\$549.....	479	15	3.1	464	15	3.2	449	28	62.4
\$550-\$649.....	449	6	1.3	443	14	3.2	429	43	100.2
\$650-\$849.....	600	11	1.8	589	19	3.2	570	53	93.0
\$850-\$1,049.....	327	8	2.4	319	10	3.1	309	22	71.2
\$1,050-\$1,249.....	104	2	1.9	102	2	2.0	100	3	30.0
\$1,250-\$1,449.....	104	1	1.0	103	3	2.9	100	4	40.0
\$1,450-\$1,849.....	52	1	.....	51	1	.....	50	3	.....
\$1,850-\$2,249.....	30	.....	.....	30	.....	.....	30	.....	.....
\$2,250-\$2,849.....	13	.....	.....	13	.....	.....	13	.....	.....
\$2,850 and over.....	20	.....	.....	20	1	.....	19	2	.....
No earnings.....	53	.....	.....	53	3	.....	50	13	.....
Not reported.....	53	2	.....	51	5	.....	46	8	.....
Italian.....	440	14	3.2	426	14	3.3	412	36	87.4
Earnings of father:									
Under \$450.....	124	2	1.6	122	2	1.6	120	20	166.7
\$450-\$549.....	99	6	.....	93	3	.....	90	4	.....
\$550-\$649.....	50	.....	.....	50	4	.....	46	3	.....
\$650-\$849.....	89	4	.....	85	1	.....	84	7	.....
\$850-\$1,049.....	33	1	.....	32	1	.....	31	.....	.....

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 18.—*Infant mortality and stillbirth rates, by earnings of father, and color and nationality of mother; births¹ in 1915—Continued.*

Earnings of father and color and nationality of mother.	Total births. ¹	Miscarriages.		Births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate. ²
		Num-ber.	Per cent. ²		Num-ber.	Per cent. ²			
Earnings of father—Contd.									
\$1,050-\$1,249.....	15			15			15		
\$1,250-\$1,449.....	8			8			8		
\$1,450-\$1,649.....	5			5			5		
\$1,650-\$2,249.....									
\$2,250-\$2,849.....	1			1			1		
\$2,850 and over.....									
No earnings.....	6			6			4	1	
Not reported.....	10	1		9	2		8	1	
Jewish.....	1,011	20	2.0	991	30	3.0	961	49	51.0
Earnings of father:									
Under \$450.....	198	3	1.5	195	5	2.6	190	11	57.9
\$450-\$549.....	146	4	2.7	142	3	2.1	139	3	21.6
\$550-\$649.....	124	3	2.4	121	4	3.3	117	8	68.4
\$650-\$849.....	190	4	2.1	186	5	2.7	181	13	71.8
\$850-\$1,049.....	129	4	3.1	125	6	4.8	119	3	25.2
\$1,050-\$1,249.....	43	2		41			41	1	
\$1,250-\$1,449.....	59			59	2		57	1	
\$1,450-\$1,649.....	31			31			31	1	
\$1,650-\$2,249.....	21			21			21		
\$2,250-\$2,849.....	7			7			7		
\$2,850 and over.....	13			13	1		12		
No earnings.....	28			28	1		27	4	
Not reported.....	22			22	3		19	4	
Polish.....	655	12	1.8	643	18	2.8	625	102	163.2
Earnings of father:									
Under \$450.....	168	4	2.4	164			164	34	207.3
\$450-\$549.....	145	4	2.8	141	6	4.3	135	15	111.1
\$550-\$649.....	149	2	1.3	147	3	2.0	144	22	152.8
\$650-\$849.....	114	1	8.8	113	5	4.4	108	14	129.6
\$850-\$1,049.....	45			45	2		43	10	
\$1,050-\$1,249.....	7			7	1		6		
\$1,250-\$1,449.....	5			5	1		4	1	
\$1,450-\$1,649.....	1			1			1		
\$1,650-\$2,249.....	1			1			1		
\$2,250-\$2,849.....									
\$2,850 and over.....									
No earnings.....	10			10			10	4	
Not reported.....	10	1		9			9	2	
All other.....	788	11	1.4	777	22	2.8	755	77	102.0
Earnings of father:									
Under \$450.....	120	2	1.7	118	4	3.4	114	20	175.4
\$450-\$549.....	89	1		88	3		85	6	
\$550-\$649.....	126	1	.8	125	3	2.4	122	10	82.0
\$650-\$849.....	207	2	1.0	205	8	3.9	197	19	96.4
\$850-\$1,049.....	120	3	2.5	117	1	.9	116	9	77.6
\$1,050-\$1,249.....	39			39	1		38	2	
\$1,250-\$1,449.....	32	1		31			31	2	
\$1,450-\$1,649.....	15	1		14	1		13	2	
\$1,650-\$2,249.....	8			8			8		
\$2,250-\$2,849.....	5			5			5		
\$2,850 and over.....	7			7			7	2	
No earnings.....	9			9			9	1	
Not reported.....	11			11	1		10	1	
Colored mothers.....	1,509	88	5.8	1,421	116	8.2	1,305	207	158.6
Earnings of father:									
Under \$450.....	603	47	7.8	556	49	8.8	507	83	163.7
\$450-\$549.....	409	13	3.2	396	40	10.1	356	60	168.5
\$550-\$649.....	170	6	3.5	164	12	7.3	152	21	138.2
\$650-\$849.....	135	10	7.4	125	1	3.2	121	14	115.7
\$850-\$1,049.....	41	3		38	3		35	6	
\$1,050-\$1,249.....	10			10			10	1	
\$1,250-\$1,449.....	5			5			5	3	
\$1,450-\$1,649.....	6			6			6		
\$1,650-\$2,249.....	1			1			1		
\$2,250-\$2,849.....	1			1			1		
\$2,850 and over.....	1			1			1		
No earnings.....	79	5		74	5		69	14	
Not reported.....	18	4		14	3		11	5	

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 19.—Earnings of father, by occupation; births in 1915.

Occupation of father.	Births in 1915.											No earnings.	Not reported.
	Total.	Earnings of father.											
		Under \$450	\$450-\$549	\$550-\$649	\$650-\$849	\$850-\$1,049	\$1,050-\$1,249	\$1,250-\$1,449	\$1,450-\$1,649	\$1,650-\$2,249	\$2,250-\$2,949			$2,950 and over.
All occupations.....	11,195	1,615	1,523	2,490	1,640	687	430	380	143	100	205	222	226
Manufacturing and mechanical industries.....	5,040	734	725	1,313	748	282	172	96	33	16	40	1	61
Blacksmiths.....	54	13	6	11	16	3	2	1	1	1	1	1	1
Belt makers.....	42	2	3	13	9	2	3	2	2	2	2	2	1
Builders and contractors.....	49	7	1	13	6	6	10	10	3	3	7	7	1
Compositors, linotypers, and pressmen.....	146	11	11	34	33	17	15	10	8	8	7	7	1
Electricians and electrical engineers.....	98	2	3	16	28	37	19	5	1	1	1	1	3
Factory operatives.....	2,588	464	473	769	267	80	46	11	5	1	2	23	23
Metal.....	951	131	163	204	292	88	40	3	4	1	1	1	4
Clothing.....	669	164	117	114	155	79	18	2	4	1	1	1	4
Wood manufacturing.....	199	24	40	54	22	1	2	3	1	1	1	1	1
Food canning.....	71	54	17	7	1	5	3	1	1	1	1	1	1
Other food manufacturing.....	170	28	32	57	17	2	1	1	1	1	1	1	1
Textile.....	58	9	14	10	2	2	1	1	1	1	1	1	1
Other.....	470	76	90	81	58	17	6	3	1	1	1	1	7
Laborers, helpers, and apprentices (not in manufacturing).....	325	125	96	56	47	4	2	0	2	2	2	2	5
Mechanics, millwrights and toolmakers.....	244	3	3	9	56	91	20	9	2	2	2	2	3
Manufacturers, proprietors, officials, etc.....	181	3	4	1	10	24	16	36	20	9	40	1	6
Shoemakers and cobblers (not in factory).....	66	17	6	14	7	2	2	1	1	1	1	1	3
Skilled mechanics, building trades.....	816	75	171	240	174	70	41	9	1	1	1	1	11
Tailors.....	91	21	13	31	17	11	7	2	1	1	1	1	3
Engineers and firemen.....	162	7	13	60	32	13	7	2	1	1	1	1	3
Others in manufacturing and mechanical industries.....	178	10	12	32	31	15	4	1	1	2	2	2	3
Trade.....	1,967	222	249	945	354	275	120	129	54	85	79	8	63
Bankers, brokers, real estate and insurance agents.....	120	2	1	2	8	20	17	9	10	6	20	1	6
Deliverymen.....	322	69	74	69	88	24	4	4	4	4	4	4	6
Laborers.....	796	72	55	42	21	49	4	4	4	4	4	4	1
Retail and wholesale dealers (officials, etc.).....	445	91	98	120	118	49	51	63	24	20	28	7	24
Business and commercial travelers.....	143	21	29	34	19	43	34	33	16	21	21	21	1
Others in trade.....	117	8	12	33	28	8	7	3	1	2	2	2	2

TABLE 21.—Estimated median earnings of father, by occupation group of father and color and nativity of mother; births in 1915.

Occupation group of father. ¹	Estimated median earnings of father. ¹			
	Total.	Color and nativity of mother.		
		Native white.	Foreign-born white.	Colored.
Total ²	\$705	\$706	\$618	\$674
Group I.....	489	560	483	432
Group II.....	610	654	585	479
Group III.....	786	811	696	596
Group IV.....	923	942	855	601
Group V.....	1,513	1,594	1,219	859

¹ For grouping see p. 36.² For method by which median earnings are computed, see Appendix IV, p. 197.³ Computations exclude cases of no occupation and cases in which earnings were not reported.

TABLE 22.—Earnings of father, by regularity of his employment, and by color and nativity of mother; births in 1915.

Earnings of father and regularity of employment.	Total births.		Births to mothers of specified color and nativity.					
			Native white.		Foreign-born white.		Colored.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Fathers employed throughout the year.....	6,524	100.0	4,548	100.0	1,318	100.0	658	100.0
Earnings of father:								
Under \$450.....	298	4.6	46	1.0	73	5.5	179	27.3
\$450-\$549.....	654	10.0	278	6.1	143	10.8	233	35.4
\$550-\$649.....	832	12.8	540	11.9	192	14.6	100	15.2
\$650-\$849.....	1,619	24.8	1,187	26.1	347	26.3	85	12.9
\$850-\$1,049.....	1,265	19.4	1,000	22.0	289	18.1	26	4.0
\$1,050-\$1,249.....	554	8.5	461	10.1	83	6.3	10	1.5
\$1,250 and over.....	1,180	18.1	965	21.2	208	15.4	12	1.8
No earnings.....	12	.2	5	.1	6	.5	1	.2
Not reported.....	110	1.7	66	1.5	32	2.4	12	1.8
Fathers not employed throughout the year.....	4,639	100.0	2,365	100.0	1,517	100.0	757	100.0
Earnings of father:								
Under \$450.....	1,317	28.4	414	17.5	526	34.7	377	49.8
\$450-\$549.....	869	18.7	385	16.3	321	21.2	163	21.5
\$550-\$649.....	711	15.3	396	16.7	251	16.5	64	8.5
\$650-\$849.....	870	18.8	588	24.9	242	16.0	40	5.3
\$850-\$1,049.....	375	8.1	283	12.0	80	5.3	12	1.6
\$1,050-\$1,249.....	124	2.7	105	4.4	19	1.3	.....	.....
\$1,250 and over.....	78	1.7	62	2.6	14	.9	2	.3
No earnings.....	210	4.5	90	3.8	47	3.1	73	9.6
Not reported.....	85	1.8	42	1.8	17	1.1	26	3.4
Fathers' employment not reported.....	32	.....	24	.....	2	.....	6	.....
Earnings of father:								
\$650-\$849.....	1	.....	1	.....	.....	.....	.....	.....
Not reported.....	31	.....	23	.....	2	.....	6	.....

TABLE 23.—Duration of nonemployment, by earnings of father, and by color and nativity of mother; births in 1915.

Duration of nonemployment and earnings of father.	Births to mothers of specified color and nativity.							
	Total births.		Native white.		Foreign-born white.		Colored.	
	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution. ¹
Total.....	11,195	100.0	6,937	100.0	2,837	100.0	1,421	100.0
Employed entire year.....	6,524	58.3	4,548	65.6	1,318	46.5	655	46.3
Nonemployed.....	4,639	41.4	2,365	34.1	1,517	53.5	757	53.3
Under 3 months.....	2,387	21.3	1,403	20.2	655	23.1	329	23.2
3 months, under 6.....	831	7.4	367	5.3	356	12.5	108	7.6
6 months and over.....	569	5.1	253	3.6	195	6.9	121	8.5
Period not reported.....	852	7.6	342	4.9	311	11.0	199	14.0
Employment not reported.....	32	.3	24	.3	2	.1	6	.4
Under \$450.....	1,615	100.0	460	100.0	599	100.0	556	100.0
Employed entire year.....	298	18.5	46	10.0	73	12.2	179	32.2
Nonemployed.....	1,317	81.5	414	90.0	526	87.8	377	67.8
Under 3 months.....	359	22.2	100	21.7	109	18.2	150	27.0
3 months, under 6.....	356	23.9	121	26.3	183	30.6	82	14.7
6 months and over.....	285	17.6	125	27.2	116	19.4	44	7.9
Period not reported.....	287	17.8	68	14.8	118	19.7	101	18.2
\$450-\$549.....	1,523	100.0	663	100.0	464	100.0	396	100.0
Employed entire year.....	654	42.9	278	41.9	143	30.8	233	58.8
Nonemployed.....	869	57.1	385	58.1	321	69.2	163	41.2
Under 3 months.....	479	31.5	235	35.4	152	32.8	92	23.2
3 months, under 6.....	180	11.8	76	11.5	84	18.1	20	5.1
6 months and over.....	39	2.6	16	2.4	21	4.5	2	.5
Period not reported.....	171	11.2	58	8.7	64	13.8	49	12.4
\$550-\$649.....	1,543	100.0	936	100.0	443	100.0	164	100.0
Employed entire year.....	832	53.9	540	57.7	192	27.5	100	61.0
Nonemployed.....	711	46.1	396	42.3	251	56.7	64	39.0
Under 3 months.....	478	31.0	273	29.2	161	36.3	44	26.8
3 months, under 6.....	107	6.9	64	6.8	38	8.6	5	3.0
6 months and over.....	13	.8	9	1.0	3	.7	1	.6
Period not reported.....	113	7.3	50	5.3	49	11.1	14	8.5
\$650-\$1,049.....	4,130	100.0	3,059	100.0	908	100.0	163	100.0
Employed entire year.....	2,884	69.8	2,187	71.5	586	64.5	111	68.1
Nonemployed.....	1,245	30.1	871	28.5	322	35.5	52	31.9
Under 3 months.....	904	21.9	657	21.5	208	22.9	39	23.9
3 months, under 6.....	137	3.3	91	3.0	46	5.1	.....	.....
6 months and over.....	16	.4	9	.3	7	.8	.....	.....
Period not reported.....	188	4.6	114	3.7	61	6.7	13	8.0
Employment not reported.....	1	.....	1	.....	.....	.....	.....	.....
\$1,050 and over.....	1,936	100.0	1,593	100.0	319	100.0	24	.....
Employed entire year.....	1,734	89.6	1,426	89.5	286	89.7	22	.....
Nonemployed.....	202	10.4	167	10.5	33	10.3	2	.....
Under 3 months.....	155	8.0	132	8.3	22	6.9	1	.....
3 months, under 6.....	13	.7	10	.6	2	.6	1	.....
6 months and over.....	1	.1	.....	.....	1	.3	.....	.....
Period not reported.....	33	1.7	25	1.6	8	2.5	.....	.....
No earnings.....	222	.....	95	.....	53	.....	74	.....
Earnings not reported.....	226	.....	131	.....	51	.....	44	.....

¹ Not shown where base is less than 100.

TABLE 24.—Cause of nonemployment of father, by color and nativity of mother; births in 1915.

Cause of nonemployment of father.	Total births.		Births to mothers of specified color and nativity.					
			Native white.		Foreign-born white.		Colored.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	11,195	100.0	6,987	100.0	2,637	100.0	1,421	100.0
Employed throughout year..	6,524	58.3	4,545	65.6	1,318	46.3	658	46.3
Nonemployed at some time during year.....	4,639	41.4	2,365	34.1	1,617	53.5	757	53.3
Work not available.....	3,625	32.4	1,802	26.0	1,248	44.0	575	40.5
Illness.....	721	6.4	424	6.1	223	7.9	74	5.2
Other reasons.....	293	2.6	139	2.0	46	1.6	108	7.6
Employment not reported...	32	.3	24	.3	2	.1	6	.4

TABLE 25.—Duration of unemployment of father, by color and nativity of mother; births in 1915 in families with fathers unemployed because work was not available.

Duration of unemployment of father.	Births in families with fathers unemployed because work not available.											
	Total.		Color and nativity of mother.									
			Native white.			Foreign-born white.			Colored.			
	Number.	Per cent distribution.	Number.	Per cent distribution.		Number.	Per cent distribution.		Number.	Per cent distribution.		
Including not reported.				Excluding not reported.	Including not reported.		Excluding not reported.	Including not reported.		Excluding not reported.		
Total.....	3,625	100.0	.....	1,802	100.0	.....	1,248	100.0	.....	575	100.0	.....
Duration not reported.....	759	20.9	.....	303	16.8	.....	274	22.0	.....	182	31.7	.....
Duration reported.....	2,866	79.1	100.0	1,499	83.2	100.0	974	78.0	100.0	393	68.3	100.0
Under 3 months.....	1,983	54.7	69.2	1,135	63.0	75.7	567	45.4	58.2	281	48.9	71.5
3 months, under 6.....	660	18.2	23.0	276	15.3	18.4	293	23.5	30.1	91	15.8	23.2
6 months, under 9.....	175	4.8	6.1	68	3.8	4.5	90	7.2	9.2	17	3.0	4.3
9 months, under 12.....	34	.9	1.2	14	.8	.9	19	1.5	2.0	1	.2	.3
12 months.....	14	.4	.5	6	.3	.4	5	.4	.5	3	.5	.8

TABLE 26.—Source of family income, by earnings of father; births in 1915.

Earnings of father.	Total births.	Births in 1915 in families where earnings of father were—												Sources not reported.
		Sole source of income.		Not sole source of income, but supplemented by—								Other income.		
				Earnings of mother or children or both, but with no other sources.		Sources included in family earnings ¹ only.		Meals, gifts.		Insurance, investments, tenants outside, or rents.				
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
Total.....	11,195	6,175	55.2	2,531	22.6	425	3.8	1,105	9.9	763	6.8	187	1.7	9
Under \$850.....	7,171	3,672	51.2	1,881	26.2	284	4.0	820	11.4	381	5.3	132	1.8	1
Under \$450.....	1,615	422	26.1	529	32.8	77	4.8	442	27.4	82	5.1	63	3.9	.....
\$450-\$549.....	1,523	723	47.5	462	30.3	55	3.6	176	11.6	77	5.1	29	1.9	.....
\$550-\$649.....	1,543	908	58.8	387	25.1	60	3.9	91	5.9	78	5.1	19	1.2	.....
\$650-\$849.....	2,490	1,619	65.0	503	20.2	92	3.7	111	4.5	144	5.8	21	.8	.....
\$850 and over.....	3,576	2,413	67.5	542	15.2	103	2.9	136	3.8	352	9.8	27	.8	3
\$850-\$1,049.....	1,640	1,098	67.0	288	17.6	58	3.5	56	3.4	123	7.5	17	1.0	.....
\$1,050-\$1,249.....	678	470	69.3	108	15.9	22	3.2	31	4.6	44	6.5	3	.4	.....
\$1,250-\$1,449.....	430	288	67.0	58	13.5	15	3.5	11	2.6	55	12.8	3	.7	.....
\$1,450-\$1,849.....	380	263	69.2	51	13.4	5	1.3	22	5.8	36	9.5	2	.5	1
\$1,850-\$2,249.....	143	92	64.3	15	10.5	.....	.....	7	4.9	28	19.6	1	.7	.....
\$2,250-\$2,849.....	100	75	75.0	8	8.0	2	2.0	4	4.0	11	11.0	.....	.....
\$2,850 and over.....	205	127	62.0	14	6.8	1	.5	5	2.4	55	26.8	1	.5	2
No earnings.....	222	7	3.2	38	17.1	28	12.6	109	49.1	17	7.7	22	9.9	1
Not reported.....	226	83	36.7	69	30.5	10	4.4	40	17.7	14	6.2	6	2.7	4

¹ In family earnings, besides earnings of father, mother, and children, are included income from tenants in home, earnings of foster parents, grandmothers, and aunts, pensions, compensation allowances, and alimony.

TABLE 27.—Source of family income, by family earnings; births in 1915.

Family earnings. ¹	Total births.	Births in 1915 in families where family earnings were—								Sources not reported.
		Sole source of income.		Not sole source of income, but supplemented by—						
				Meals or gifts.		Insurance, investments, tenants outside, or rents.		Other income.		
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
Total.....	11,195	9,131	81.6	1,105	9.9	763	6.8	187	1.7	9
Under \$850.....	6,585	5,249	79.7	874	13.3	362	5.5	105	1.6	.....
Under \$450.....	1,185	694	58.6	308	26.0	67	5.7	26	2.2	.....
\$450-\$549.....	1,309	1,051	80.3	178	13.6	59	4.5	21	1.6	.....
\$550-\$649.....	1,518	1,268	83.5	150	9.9	81	5.3	19	1.3	.....
\$650-\$849.....	2,573	2,226	86.9	148	5.8	155	6.0	34	1.3	.....
\$850 and over.....	4,208	3,601	85.6	169	3.8	374	8.9	72	1.7	2
\$850-\$1,049.....	1,776	1,552	87.4	67	3.8	132	7.4	25	1.4	.....
\$1,050-\$1,249.....	879	779	87.6	37	4.2	54	6.1	18	2.0	.....
\$1,250-\$1,849.....	1,034	884	85.5	39	3.8	99	8.7	21	2.0	.....
\$1,850 and over.....	519	395	76.1	16	3.1	98	18.9	8	1.5	2
No earnings.....	40	11	27.5	21	52.5	8	20.0	.....	.....	.....
Not reported.....	362	270	74.6	51	14.1	19	5.2	15	4.1	7

¹ In family earnings, besides earnings of father, mother, and children, are included income from tenants in home, earnings of foster parents, grandmothers, and aunts, pensions, compensation allowances, and alimony.

TABLE 28.—Earnings of father as sole source of family income, by amount of his earnings and color and nativity of mother; births in 1915.

Earnings of father.	Births in families where earnings of father were sole source of income. ¹					
	Native white mothers.		Foreign-born white mothers.		Colored mothers.	
	Number.	Per cent of total births. ²	Number.	Per cent of total births. ²	Number.	Per cent of total births. ²
Total.....	4,611	66.5	1,277	45.0	287	21.2
Under \$450.....	149	32.4	199	33.2	74	12.3
\$450-\$549.....	411	62.0	214	46.1	98	26.7
\$550-\$849.....	626	66.9	229	51.7	53	32.3
\$850-\$949.....	1,281	72.1	312	53.0	26	28.6
\$950-\$1,049.....	928	72.3	154	45.3	16	.....
\$1,050-\$1,249.....	420	74.2	46	45.1	4	.....
\$1,250-\$1,449.....	235	73.0	50	48.5	3	.....
\$1,450-\$1,849.....	240	74.3	18	.....	5	.....
\$1,850-\$2,249.....	89	71.4	12	.....	.....	.....
\$2,250-\$2,849.....	65	.....	9	.....	1	.....
\$2,850 and over.....	116	63.0	10	.....	1	.....
No earnings.....	2	.....	5	.....	.....	.....
Not reported.....	58	44.3	19	.....	6	.....

¹ For total births in each color and nativity and father's earnings group, see Table 17, p. 233.
² Not shown where base is less than 100.

TABLE 29.—Family earnings, by earnings of father; births in 1915.

Family earnings.	Births in families where father earned specified amount.													
	Total births.		Under \$550		\$550-\$849		\$850-\$1,249		\$1,250-1,849		\$1,850 and over.			
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.		
Total.....	11,195	100.0	3,138	100.0	4,033	100.0	2,318	100.0	810	100.0	448	100.0	222	238
Under \$550.....	2,494	22.3	2,345	74.7	.....	.....	.....	.....	.....	.....	.....	.....	147	2
\$550-\$849.....	4,091	36.5	625	19.9	3,455	85.7	.....	.....	.....	.....	.....	.....	11	.....
\$850-\$1,249.....	2,655	23.7	90	2.9	462	11.2	2,109	91.0	.....	.....	.....	.....	3	1
\$1,250-\$1,849.....	1,034	9.2	26	.8	66	1.6	167	7.2	770	95.1	.....	.....	3	2
\$1,850 and over.....	519	4.6	3	.1	14	.3	22	.9	30	3.7	446	99.6	4	.....
No earnings.....	40	.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	.....
Not reported.....	362	3.2	49	1.6	46	1.1	20	.9	10	1.2	2	.4	14	221

TABLE 30.—Earnings of mother, by color and nativity; births¹ in 1915 to mothers employed within year after birth of infant.

Earnings of mother during year after birth of infant.	Births ¹ in 1915 to mothers employed within year after birth.									
	Total.		White mothers.						Colored mothers.	
	Number.	Per cent distribution.	Total.		Native.		Foreign born.		Number.	Per cent distribution.
			Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.		
Total.....	2,354	100.0	2,321	100.0	1,237	100.0	1,084	100.0	1,033	100.0
Under \$50.....	645	19.2	439	18.9	231	18.7	208	19.2	206	19.9
\$50-\$149.....	1,048	31.2	587	25.3	303	21.5	284	26.2	461	41.0
\$150-\$249.....	639	19.1	387	16.7	238	19.2	149	13.7	252	24.4
\$250-\$349.....	258	7.7	210	9.0	133	12.1	77	5.3	48	4.6
\$350-\$549.....	146	4.4	128	5.5	87	7.0	41	3.8	18	1.7
\$550 and over.....	41	1.2	39	1.7	28	2.3	11	1.0	2	.2
No earnings.....	4	.1	3	.1	3	.2	2	.1	1	.1
Not reported.....	573	17.1	529	22.7	191	15.7	334	30.8	45	4.4

¹Includes miscarriages.

TABLE 31.—Monthly rental, by color and nationality of mother; infants born in 1915 who lived at least two weeks in rented dwellings studied.

Monthly rental.	Infants who lived at least 2 weeks in dwellings studied.											
	Total.	Foreign-born white mothers.									Colored mothers.	
		Native white mothers.	Total.	Jewish.	Polish.	Italian.	German.	Irish, English, Scotch, and English-Canadian.	Bohemian.	Lithuanian.		All other foreign.
Total.....	7,300	4,351	1,820	684	423	296	163	92	27	72	63	1,129
Under \$5.....	360	123	203	11	165	13	4	.....	2	4	4	24
\$5, under \$10.....	2,579	1,375	909	314	229	182	58	19	20	55	32	295
\$10, under \$15.....	2,324	1,553	416	206	7	66	72	40	3	9	13	355
\$15, under \$20.....	905	599	89	38	3	14	9	17	1	1	6	217
\$20, under \$25.....	275	163	23	13	.....	.....	2	6	.....	1	1	89
\$25, under \$35.....	250	158	14	5	1	1	4	.....	.....	1	1	74
\$35, under \$50.....	81	73	6	4	.....	.....	1	.....	.....	.....	1	2
\$50 and over.....	44	40	4	1	.....	.....	1	2	.....	.....	.....	.....
Free.....	95	70	5	2	1	.....	1	1	.....	.....	.....	20
Not reported.....	397	197	151	90	17	20	15	2	.....	1	5	49
Per cent distribution. ¹												
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under \$5.....	4.8	2.8	11.2	1.6	39.0	4.4	2.5	.....	.....	.....	.....	2.1
\$5, under \$10.....	35.3	31.6	49.9	45.9	54.1	61.5	35.6	.....	.....	.....	.....	26.1
\$10, under \$15.....	31.8	35.7	22.9	30.1	1.7	22.3	44.2	.....	.....	.....	.....	31.4
\$15, under \$20.....	12.4	13.8	4.9	5.6	.....	7	4.7	5.5	.....	.....	.....	19.2
\$20, under \$25.....	3.8	3.7	1.3	1.9	.....	.....	1.2	.....	.....	.....	.....	7.9
\$25, under \$35.....	3.4	3.6	.8	.7	.....	.3	.6	.....	.....	.....	.....	6.9
\$35, under \$50.....	1.1	1.7	.3	.6	.....	.....	.....	.....	.....	.....	.....	.2
\$50 and over.....	.6	.9	.2	.1	.....	.....	.6	.....	.....	.....	.....	.....
Free.....	1.3	1.6	.3	.3	.....	.....	.6	.....	.....	.....	.....	1.8
Not reported.....	5.4	4.5	8.3	13.2	4.0	6.8	9.2	.....	.....	.....	.....	4.3

¹Not shown where base is less than 100.

TABLE 32.—*Monthly rental, by earnings of father; infants born in 1915 who lived at least two weeks in rented dwellings studied.*

Monthly rental.	Infants born in 1915 who lived at least 2 weeks in dwellings studied.														
	Total.	Earnings of father.												No earn-ings.	Not re-ported.
		Under \$450.	\$450- \$549	\$550- \$649	\$650- \$849	\$850- \$1,049	\$1,050- \$1,249	\$1,250- \$1,449	\$1,450- \$1,649	\$1,650- \$2,249	\$2,250- \$2,849	\$2,850 and over.			
Total.....	7,300	1,270	1,172	1,117	1,669	916	323	196	165	54	41	85	153	139	
Under \$5.....	350	105	85	71	53	13	1	2					12	8	
\$5, under \$10..	2,579	624	555	487	587	184	43	16	7	1		1	46	28	
\$10, under \$15.	2,324	300	324	390	664	385	114	52	24	6	2		28	35	
\$15, under \$20.	905	89	102	83	206	206	88	57	37	5	7	4	11	10	
\$20, under \$25.	275	42	30	16	42	43	30	19	33	5	2	2	9	9	
\$25, under \$35.	250	39	19	17	27	25	26	21	29	13	7	16	3	8	
\$35, under \$50.	81	1	1		1	1	1	1	17	10	14	28	3	3	
\$50 and over..	44								3	5	5	29		1	
Free.....	95	24		7	7	4	1	1					42	9	
Not reported..	397	46	56	46	82	55	18	27	15	9	4	5	6	28	
Per cent distribution. ¹															
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Under \$5.....	4.8	8.3	7.3	6.4	3.2	1.4	.3	1.0					7.8	5.8	
\$5, under \$10..	35.3	49.1	47.4	43.6	35.2	20.1	13.3	8.2	4.2				30.1	20.1	
\$10, under \$15.	31.8	23.6	27.6	34.9	39.8	42.0	35.3	26.5	14.5				18.3	25.2	
\$15, under \$20.	12.4	7.0	8.7	7.4	12.3	22.5	27.2	29.1	22.4				7.2	7.2	
\$20, under \$25.	3.8	3.3	2.6	1.4	2.5	4.7	9.3	9.7	20.0				1.3	6.5	
\$25, under \$35.	3.4	3.1	1.6	1.5	1.6	2.7	8.0	10.7	17.6				2.0	5.8	
\$35, under \$50.	1.1	.1	.1		.1	.1	.3	.5	10.3				2.0	2.2	
\$50 and over..	.6						.3		1.8					.7	
Free.....	1.3	1.9		.6	.4	.4	.3	.5					27.5	6.5	
Not reported..	5.4	3.6	4.8	4.1	4.9	6.0	5.6	13.8	9.1				3.9	20.1	

¹ Not shown where base is less than 100.TABLE 33.—*Estimated median rental, by estimated median earnings of father and by color and nationality of mother; births in 1915.*

Color and nationality of mother.	Median annual earnings of father. ¹	Annual rental.	
		Median amount. ²	Per cent of median earnings.
Total.....	\$706	\$132	18.6
Native white.....	796	141	17.7
Foreign-born white.....	619	102	16.5
Jewish.....	664	115	17.3
Polish.....	555	70	12.6
Italian.....	540	101	18.7
All other.....	619	119	19.2
German.....	718	130	18.1
Irish, English, Scotch, and English-Canadian.....	781	159	20.4
Bohemian.....	708	95	13.5
Lithuanian.....	335	95	18.1
Other.....	671	108	16.1
Colored.....	474	156	32.9

¹ Based on births, except for Irish, English, Scotch, and English-Canadian, Lithuanian, Bohemian, and "all other" foreign which are based on issues.² Based on infants living at least 2 weeks in dwellings studied.

TABLE 34.—Sanitary arrangements of dwelling, by color and nationality of mother and earnings of father; infants born in 1915 who lived at least two weeks in dwellings studied.

Color and nationality of mother and earnings of father.	Infants who lived at least 2 weeks in dwellings with specified sanitary arrangements.						
	Total infants.	All arrangements. ¹		None.		Other dwellings.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
All earnings groups:							
All mothers.....	10,336	4,496	43.4	351	3.4	5,499	53.2
Native white.....	6,464	3,273	50.6	180	2.9	3,001	46.4
Foreign-born white.....	2,649	816	30.8	126	4.8	1,707	64.4
Jewish.....	931	399	41.8	11	1.2	531	57.0
Italian.....	394	80	20.3	9	2.3	305	77.4
Polish.....	597	35	5.9	71	11.9	491	82.2
All other.....	727	312	42.9	35	4.8	380	52.3
Colored.....	1,223	397	32.5	35	2.9	791	64.7
Earnings of father under \$650:							
All mothers.....	4,372	1,061	25.3	234	5.5	2,957	69.2
Native white.....	1,913	556	29.1	111	5.8	1,246	65.1
Foreign-born white.....	1,409	296	16.7	91	6.5	1,062	76.8
Jewish.....	432	107	24.8	7	1.6	318	73.6
Polish.....	424	20	4.7	52	12.3	352	83.0
Italian.....	243	30	12.3	8	3.3	205	84.4
All other.....	310	79	25.5	24	7.7	207	66.8
Colored.....	950	289	30.4	32	3.4	629	66.2

¹ Dwellings having "all arrangements" have bath and toilet connected with sewer, and reserved for exclusive use of family.

TABLE 35.—Number of persons in household, by number of rooms in dwelling, and by color and nativity of mother, infants born in 1915 who lived at least two weeks in dwellings studied.

		Infants born in 1915 who lived at least 2 weeks in dwellings studied.																			
		Number of rooms in dwelling.																			
Total.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	22	Not re-ported.
All mothers.....		42	731	1,404	1,297	1,130	3,585	884	677	286	163	47	34	22	13	5	1	6	1	1	7
Number of persons in household:		11	2	1	246	145	446	49	24	6	3	5	2	1	3	1	1	1	1	1	1
1	.....	4	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	.....	25	307	568	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	.....	1,862	201	362	297	249	619	94	60	23	12	2	1	3	1	1	1	1	1	1	1
4	.....	1,931	8	201	362	297	249	619	94	60	23	12	2	1	3	1	1	1	1	1	1
5	.....	1,720	1	104	224	249	197	641	142	82	34	17	7	3	2	1	1	1	1	1	1
6	.....	1,563	3	69	126	184	195	658	138	91	44	17	3	3	1	1	1	1	1	1	1
7	.....	1,142	1	29	58	153	142	471	119	96	36	22	4	5	1	1	1	1	1	1	1
8	.....	806	1	10	43	90	105	354	111	88	41	21	7	2	4	1	1	1	1	1	1
9	.....	559	7	22	51	53	200	83	51	36	14	4	2	2	4	1	1	1	1	1	1
10	.....	322	2	.....	20	25	107	59	64	22	8	3	6	3	1	1	1	1	1	1	1
11	.....	185	.....	.....	4	12	59	32	32	20	15	4	3	1	1	1	1	1	1	1	1
12	.....	100	.....	.....	2	1	25	16	33	11	5	4	2	1	1	1	1	1	1	1	1
13	.....	44	.....	.....	3	10	9	9	7	6	4	1	1	1	1	1	1	1	1	1	1
14	.....	29	.....	.....	5	7	5	4	1	1	1	1	1	1	1	1	1	1	1	1	1
15	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	.....	6	.....	.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Not reported.....		1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
White mothers.....		22	.....	.....	1	1	5	2	6	1	1	1	1	1	1	1	1	1	1	1	4
Number of persons in household:		9,113	674	1,355	1,148	976	3,239	714	306	221	132	39	29	20	13	5	1	6	1	1	6
1	.....	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	.....	1,730	17	283	557	229	134	427	48	23	6	3	1	1	1	1	1	1	1	1	1
3	.....	1,789	5	181	346	267	491	561	28	12	2	2	2	3	1	1	1	1	1	1	1
4	.....	1,539	.....	90	214	210	171	586	123	59	33	31	6	2	1	1	1	1	1	1	1
5	.....	1,375	2	66	117	162	174	582	134	74	35	13	6	2	1	1	1	1	1	1	1
6	.....	972	1	27	56	135	117	412	96	72	24	10	3	4	1	1	1	1	1	1	1
7	.....	700	9	42	78	82	284	78	50	30	19	6	7	2	1	1	1	1	1	1	1
8	.....	447	6	22	44	166	69	69	57	37	27	10	3	3	1	1	1	1	1	1	1

9.....	269	1	18	19	93	41	33	16	6	3	4	3	1	1	1	1	1	1
10.....	147	1	4	11	54	27	21	11	9	3	3	3	1	1	1	1	1	1
11.....	176	1	76	1	23	12	23	8	3	3	2	2	1	1	1	1	1	1
12.....	27	1	13	2	8	4	6	6	1	1	1	1	1	1	1	1	1	1
13.....	17	1	13	3	5	4	1	1	1	1	1	1	1	1	1	1	1	1
14.....	3	1	1	4	1	1	2	1	1	1	1	1	1	1	1	1	1	1
15.....	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Not reported.....	15	1	1	4	1	1	3	1	1	1	1	1	1	1	1	1	1	3
Native mothers.....	6,464	9	272	691	692	2,671	569	407	394	116	37	25	17	13	5	1	6	1
Number of persons in household:																		
1.....	3	1	1	1	1	1	42	21	6	2	3	1	1	1	1	1	1	1
2.....	1,296	4	154	394	179	115	376	51	23	11	2	2	2	1	1	1	1	1
3.....	1,320	3	77	206	178	501	74	51	28	28	6	3	2	1	1	1	1	1
4.....	1,072	1	24	82	120	121	498	109	49	28	6	2	4	2	1	1	1	1
5.....	982	1	13	30	84	129	496	103	65	34	11	8	4	3	1	1	1	1
6.....	665	2	12	62	70	331	78	58	21	18	5	5	6	2	1	1	1	1
7.....	479	1	6	32	46	224	61	46	28	15	5	6	2	4	1	1	1	1
8.....	282	1	2	16	19	123	44	38	23	9	2	1	3	1	1	1	1	1
9.....	104	1	7	8	59	24	39	10	5	3	4	2	1	1	1	1	1	1
10.....	93	1	1	3	35	18	16	7	7	6	3	2	1	1	1	1	1	1
11.....	57	1	1	1	15	8	18	7	3	3	2	2	1	1	1	1	1	1
12.....	19	1	1	1	1	4	4	3	5	1	3	1	1	1	1	1	1	1
13.....	15	1	1	1	1	4	4	1	1	3	1	1	1	1	1	1	1	1
14.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Not reported.....	9	1	1	1	3	1	3	1	1	1	1	1	1	1	1	1	1	1
Foreign-born mothers.....	2,649	18	402	623	457	284	145	99	27	16	2	3	3	2	2	3	3	2
Number of persons in household:																		
1.....	5	1	1	1	1	1	6	2	2	1	1	1	1	1	1	1	1	1
2.....	434	13	129	163	50	19	51	5	5	3	1	1	1	1	1	1	1	1
3.....	469	2	104	140	77	39	90	11	8	1	1	1	1	1	1	1	1	1
4.....	467	1	75	132	90	50	88	14	10	5	3	2	1	1	1	1	1	1
5.....	393	1	53	87	78	45	86	31	9	1	2	1	1	1	1	1	1	1
6.....	307	1	25	44	73	47	81	18	14	3	1	1	1	1	1	1	1	1
7.....	221	1	8	36	46	36	60	17	10	2	4	1	1	1	1	1	1	1
8.....	195	1	6	20	28	28	43	16	19	4	1	1	1	1	1	1	1	1
9.....	95	1	1	1	1	1	34	17	14	6	1	1	1	1	1	1	1	1
10.....	54	1	1	1	1	1	19	9	5	4	2	1	1	1	1	1	1	1
11.....	19	1	1	1	1	1	8	4	1	1	1	1	1	1	1	1	1	1
12.....	8	1	1	1	1	1	3	4	5	1	1	1	1	1	1	1	1	1

1 The number of persons in household does not include infants born in 1915.

TABLE 35.—Number of persons in household, by number of rooms in dwelling, and by color and nativity of mother; infants born in 1915 who lived at least two weeks in dwellings studied—Continued.

		Infants born in 1915 who lived at least 2 weeks in dwellings studied.																					
		Number of rooms in dwelling.																					
Total.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	22	Not re-ported.		
Number of persons ¹ in household and color and nativity of mother.																							
Number of persons in household—Con.																							
13	2						1							1									
14	1						1																
15	2						1																
16	1						1																
20	6						1		2													2	
Not reported																							
Colored mothers		15	57	49	149	154	346	170	171	65	31	8	5	2								1	
Number of persons in household:																							
1	3	2	24	11	17	11	1	1	1														
2	92	3	20	16	30	32	28	9	4														
3	142	3	5	10	39	26	55	19	23	1				1									
4	181	1	3	9	23	21	76	24	17	4													
5	188	1	2	2	18	51	50	53	24	12	3	1	1										
6	170		1	1	12	23	52	33	32	11	2	2	1										
7	160		1		7	6	34	23	24	7	9	4	2	1									
8	112		1		2	0	14	18	11	7	5	2	1	2									
9	63		1		2	1	5	6	11	0	6	1											
10	36		1		2	1	2	4	10	3	2	1											
11	24				2		1	2	5	3	1												
12	17						2	3	4	3	1	1											
13	12						1	2	3	4	3												
14	12							1	2	3	1	1											
15	2							1	2	1	1												
16	1							1	1														
17	2							1	3														
Not reported																							
7								1	3													1	

¹ The number of persons in household does not include infants born in 1915.

WAGES AND UNEMPLOYMENT.

Infants who lived at least 2 weeks in dwellings studied.

Average number of persons per room and number of persons in household. ¹	Native white mothers.						Foreign-born white mothers.						All other.		Colored mothers.		
	Total.		Jewish.		Polish.		Italian.		Num-ber.	Per cent distri-bution.	Num-ber.	Per cent distri-bution.	Num-ber.	Per cent distri-bution.	Num-ber.	Per cent distri-bution.	
	Num-ber.	Per cent distri-bution.	Num-ber.	Per cent distri-bution.	Num-ber.	Per cent distri-bution.	Num-ber.	Per cent distri-bution.									
All households.....	10,336	100.0	6,464	100.0	2,649	100.0	931	100.0	597	100.0	396	100.0	729	100.0	1,223	100.0	
Number of persons per room:																	
Less than 1.....	3,344	32.3	4,108	63.6	882	33.3	342	36.7	68	11.4	107	27.1	305	41.8	504	41.5	
1.....	4,268	41.3	3,118	48.5	1,414	53.4	544	58.4	345	57.8	230	58.2	377	51.7	614	50.2	
2.....	468	4.5	107	1.7	343	12.9	83	8.9	183	30.7	45	11.4	22	3.0	48	3.9	
3 or over.....	23	.2	12	.2	0	.0	0	.0	1	.2	3	.8	2	.3	7	.6	
Households with 2 or 4.....	3,484	33.7	3,691	57.1	1,375	51.8	506	54.4	314	52.6	176	44.2	340	46.5	418	34.2	
Number of persons per room:																	
Less than 1.....	1,922	55.2	3,020	81.8	649	47.2	273	54.0	59	18.5	72	41.1	285	75.0	290	23.7	
1.....	1,117	32.1	640	17.3	306	22.5	216	43.1	169	40.2	97	58.4	92	24.2	111	9.1	
2.....	188	5.6	31	.8	90	6.5	18	3.0	66	21.0	6	3.4	3	.8	17	1.4	
3 or over.....	4,820	46.6	2,784	42.2	1,268	47.3	425	45.5	282	47.2	217	54.4	344	47.0	796	65.0	
Number of persons per room:																	
Less than 1.....	1,515	35.6	1,085	32.4	193	15.2	69	16.2	9	3.2	35	16.1	40	22.2	294	24.1	
1.....	2,222	51.5	1,577	47.3	820	64.5	288	67.8	156	45.3	133	61.3	245	71.2	595	48.6	
2.....	597	13.8	107	3.2	233	30.0	68	16.0	117	41.5	49	22.6	19	6.8	31	2.5	
3 or over.....	21	.2	7	.2	5	.4	0	.0	1	100.0	3	100.0	2	100.0	7	100.0	

1. Includes persons in hotels, boarding houses, and other transient places.

TABLE 37.—Average number of persons per room, by earnings of father and color and nativity of mother; infants born in 1915 who lived at least two weeks in dwellings studied.

Average number of persons ¹ per room and earnings of father.	Infants who lived at least 2 weeks in dwellings studied.							
	Total.		Native white mothers.		Foreign-born white mothers.		Colored mothers.	
	Num-ber	Per cent distribution.	Num-ber	Per cent distribution. ²	Num-ber	Per cent distribution. ²	Num-ber	Per cent distribution. ²
All earnings groups.....	10,336	100.0	6,464	100.0	2,649	100.0	1,223	100.0
Persons per room:								
Less than 1.....	5,544	53.6	4,108	63.6	882	33.3	554	45.3
1 or more.....	4,797	46.1	2,344	36.3	1,761	66.5	662	54.1
1 but less than 2.....	4,289	41.3	2,237	34.6	1,418	53.5	614	50.2
2 or more.....	498	4.8	107	1.7	343	12.9	48	3.9
Not reported.....	25	.2	12	.2	6	.2	7	.6
Under \$550.....	2,844	100.0	1,041	100.0	995	100.0	808	100.0
Persons per room:								
Less than 1.....	994	35.0	441	42.4	206	20.7	347	42.9
1 or more.....	1,840	64.7	599	57.5	785	78.9	456	56.3
1 but less than 2.....	1,585	54.7	551	52.9	581	58.4	428	52.4
2 or more.....	285	10.0	48	4.6	204	20.5	38	4.1
Not reported.....	10	.4	1	.1	4	.4	5	.6
\$550-\$849.....	3,749	100.0	2,527	100.0	963	100.0	259	100.0
Persons per room:								
Less than 1.....	1,906	50.8	1,456	57.6	321	33.3	128	49.4
1 or more.....	1,836	49.0	1,086	42.2	641	66.6	129	49.3
1 but less than 2.....	1,682	44.9	1,028	40.6	535	55.6	122	47.1
2 or more.....	154	4.1	41	1.6	106	11.0	7	2.7
Not reported.....	8	.2	5	.2	1	.1	2	.8
\$850-\$1,249.....	2,183	100.0	1,745	100.0	397	100.0	41	100.0
Persons per room:								
Less than 1.....	1,509	69.1	1,283	73.5	200	50.4	26	63.4
1 or more.....	671	30.7	460	26.4	196	49.4	15	36.6
1 but less than 2.....	644	29.5	452	25.9	177	44.6	15	36.6
2 or more.....	27	1.2	8	.5	19	4.8	.....	.....
Not reported.....	3	.1	2	.1	1	.3	.....	.....
\$1,250 and over.....	1,170	100.0	961	100.0	205	100.0	14	100.0
Persons per room:								
Less than 1.....	958	81.9	824	86.6	122	59.5	12	85.7
1 or more.....	209	17.9	124	13.0	83	40.5	2	14.3
1 but less than 2.....	201	17.2	119	12.5	80	39.0	2	14.3
2 or more.....	8	.7	5	.5	3	1.5	.....	.....
Not reported.....	3	.3	3	.3	.....	.....	.....	.....
No earnings.....	192	100.0	81	100.0	47	100.0	64	100.0
Persons per room:								
Less than 1.....	67	34.9	31	.....	11	.....	25	.....
1 or more.....	125	65.1	50	.....	36	.....	39	.....
1 but less than 2.....	108	56.2	47	.....	27	.....	34	.....
2 or more.....	17	8.9	3	.....	9	.....	5	.....
Earnings not reported..	198	100.0	119	100.0	42	100.0	37	100.0
Persons per room:								
Less than 1.....	111	56.1	73	61.3	22	.....	16	.....
1 or more.....	86	43.4	45	37.8	20	.....	21	.....
1 but less than 2.....	79	39.9	43	36.1	18	.....	18	.....
2 or more.....	7	3.5	2	1.7	2	.....	3	.....
Not reported.....	1	.5	1	.8	.....	.....	.....	.....

¹ The number of persons in household does not include infants born in 1915.² Not shown where base is less than 100.

TABLE 38.—Total number of births ¹ to mother, by earnings of father and color and nativity of mother; single births in 1915.

Earnings of father and color and nativity of mother.	Per cent of births in 1915 to mothers reporting specified number of total births. ¹			
	1-3	4-6	7-9	10 and over.
All mothers.....	62.9	23.5	9.5	4.1
Earnings of father:				
Under \$550.....	54.9	26.5	12.9	5.8
\$550-\$949.....	63.5	23.7	9.2	3.7
\$950-\$1,249.....	68.1	21.1	7.3	3.4
\$1,250-\$1,849.....	68.8	21.8	6.5	2.9
\$1,850 and over.....	75.3	17.4	5.7	1.6
No earnings.....	62.0	25.0	8.8	4.2
Not reported.....	65.3	22.6	7.7	4.5
Native white mothers.....	69.4	20.8	7.1	2.7
Earnings of father:				
Under \$550.....	63.7	21.9	10.6	3.8
\$550-\$949.....	68.3	22.0	7.3	2.5
\$950-\$1,249.....	71.0	19.9	6.4	2.8
\$1,250-\$1,849.....	72.9	19.6	4.9	2.6
\$1,850 and over.....	79.9	15.0	3.7	1.8
No earnings.....	71.0	18.3	8.6	2.2
Not reported.....	69.8	22.5	5.4	2.3
Foreign-born white mothers.....	52.3	28.4	13.3	5.9
Earnings of father:				
Under \$550.....	48.9	30.1	14.9	6.2
\$550-\$949.....	54.4	27.3	12.6	5.7
\$950-\$1,249.....	56.0	26.3	11.3	6.4
\$1,250-\$1,849.....	51.9	30.5	13.0	4.5
\$1,850 and over.....	45.9	32.8	18.0	3.3
No earnings.....	52.9	25.5	9.8	11.8
Not reported.....	61.2	22.4	12.2	4.1
Colored mothers.....	52.2	27.5	13.0	7.3
Earnings of father:				
Under \$550.....	51.4	27.7	13.3	7.6
\$550-\$949.....	50.5	27.0	14.6	7.8
\$950 and over.....	64.3	23.2	8.9	3.6
No earnings.....	56.9	33.3	8.3	1.4
Not reported.....	56.8	22.7	9.1	11.4

¹ Includes miscarriages.TABLE 39.—Total number of births ¹ to mother, by nationality of mother; births ¹ in 1915 to foreign-born white mothers.

Nationality of mother.	Per cent of births ¹ to mothers reporting specified number of total births. ¹		
	1-3	4-6	7 and over.
Foreign-born white mothers:			
Jewish.....	53.3	29.1	17.6
Polish.....	45.2	29.3	25.5
Italian.....	45.9	34.5	19.5
All other.....	56.3	25.1	18.5

¹ Includes miscarriages.

TABLE 40.—*Keeping of lodgers, by color and nationality of mother; infants born in 1915 who lived at least two weeks in dwellings studied.*

Color and nationality of mother.	Per cent of infants ¹ whose mothers kept specified number of lodgers.	
	1 or more.	3 or more.
All mothers.....	8.4	0.9
Native white mothers.....	6.5	.5
Foreign-born white mothers.....	12.2	1.7
Jewish.....	8.7	.8
Polish.....	11.1	.5
Italian.....	18.3	4.8
All other.....	14.2	2.1
German.....	8.8	.3
Irish, English, Scotch, and English-Canadian.....	16.5	1.6
Bohemian.....	7.9	.....
Lithuanian.....	22.9	2.1
Other.....	28.3	10.5
Colored mothers.....	10.3	1.3

¹ Infants who lived at least two weeks in dwellings studied.

TABLE 41.—*Mother pregnant within year after birth of infant, by color and nationality of mother; live births in 1915.*

Color and nationality of mother.	Live births in 1915.		
	Total.	To mothers pregnant within the year following.	
		Number.	Per cent.
Total.....	10,797	1,563	14.5
Native white.....	6,739	890	12.5
Foreign-born white.....	2,758	460	16.7
Jewish.....	951	90	9.4
Polish.....	625	144	23.0
Italian.....	412	118	28.6
All other.....	755	108	14.3
Colored.....	1,305	263	20.2

TABLE 42.—Type of feeding, by month of life, and by earnings of father and color and nativity of mother; infants born in 1915 to native white and colored mothers not employed within year after birth.

Month of life of infant, earnings of father, and color and nativity of mother.	Total infants.	Infants whose mothers were not employed and who had specified type of feeding.						Type of feeding not reported.
		Breast feeding.		Mixed feeding.		Artificial feeding.		
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
NATIVE WHITE MOTHERS.								
Earnings of father under \$550:								
Second month.....	975	770	79.1	56	5.7	149	15.3	
Third month.....	923	663	71.8	79	8.6	181	19.6	
Sixth month.....	831	431	51.9	174	21.0	226	27.2	
Ninth month.....	759	218	28.7	309	40.7	232	30.6	
Earnings of father, \$550 and over:								
Second month.....	4,998	3,868	77.4	224	4.5	905	18.1	
Third month.....	4,846	3,405	70.3	275	5.7	1,165	24.0	
Sixth month.....	4,626	2,443	42.8	684	14.8	1,498	32.4	
Ninth month.....	4,495	1,393	31.0	1,437	32.0	1,664	37.0	
COLORED MOTHERS.								
Earnings of father under \$550:								
Second month.....	757	613	81.0	69	9.1	75	9.9	
Third month.....	629	478	76.0	69	11.0	82	13.0	
Sixth month.....	394	230	58.4	88	22.3	76	19.3	
Ninth month.....	297	97	32.7	136	45.8	64	21.5	
Earnings of father, \$550 and over:								
Second month.....	302	237	78.5	25	8.3	40	13.2	
Third month.....	264	201	76.1	28	10.6	35	13.3	
Sixth month.....	203	118	58.1	47	23.2	38	18.7	
Ninth month.....	165	57	34.5	70	42.4	38	23.0	

TABLE 43.—Type of feeding, by month of life of infant, and by literacy and color and nativity of mother; infants born in 1915.

Month of life of infant, literacy, and color and nativity of mother.	Per cent of infants having specified type of feeding.		
	Breast feeding.	Mixed feeding.	Artificial feeding.
Native white mothers:			
Literate—			
First month.....	86.7	2.3	11.0
Second month.....	77.3	4.8	17.9
Third month.....	70.1	6.2	23.7
Sixth month.....	52.1	16.0	31.9
Ninth month.....	30.1	33.6	36.3
Illiterate—			
First month.....	79.4	5.6	15.1
Second month.....	75.6	8.1	16.3
Third month.....	71.1	9.9	19.0
Sixth month.....	55.7	17.4	27.0
Ninth month.....	33.0	39.4	27.5
Foreign-born white mothers:			
Literate—			
First month.....	91.5	3.0	5.5
Second month.....	85.2	5.8	9.0
Third month.....	79.0	9.0	12.0
Sixth month.....	58.2	23.8	18.0
Ninth month.....	27.4	48.8	23.8
Illiterate—			
First month.....	90.8	4.2	5.0
Second month.....	83.5	8.3	8.3
Third month.....	78.4	11.1	10.5
Sixth month.....	60.1	23.3	16.6
Ninth month.....	30.4	48.8	20.8
Colored mothers:			
Literate—			
First month.....	90.5	2.4	7.1
Second month.....	78.9	0.0	12.1
Third month.....	70.4	14.2	15.4
Sixth month.....	48.5	28.6	22.9
Ninth month.....	21.9	48.8	29.3
Illiterate—			
First month.....	87.9	6.0	6.0
Second month.....	71.3	18.9	9.8
Third month.....	58.5	26.8	14.8
Sixth month.....	34.3	43.8	21.9
Ninth month.....	15.7	58.2	26.1

TABLE 44.—Prevalence of artificial feeding, by month of life of infant, and by ability of mother to speak English and nationality of mother; infants born in 1915 to Jewish, Polish, and Italian mothers.

Month of life of infant and nationality of mother.	Mothers able to speak English.			Mothers not able to speak English.		
	Infant survivors.			Infant survivors.		
	Total.	Artificially fed.		Total.	Artificially fed.	
		Number.	Per cent.		Number.	Per cent.
Jewish mothers:						
First month.....	786	18	2.3	175	9	5.1
Second month.....	766	43	5.6	169	12	7.1
Third month.....	764	56	7.3	168	14	8.3
Sixth month.....	759	94	12.4	166	25	15.1
Ninth month.....	755	135	17.9	165	26	21.8
Twelfth month.....	748	193	25.8	166	47	28.5
Polish mothers:						
First month.....	223	9	4.0	402	20	5.0
Second month.....	207	17	8.2	383	26	6.8
Third month.....	205	22	10.7	382	33	9.9
Sixth month.....	201	34	16.9	368	54	14.7
Ninth month.....	191	39	20.4	353	60	17.0
Twelfth month.....	186	48	25.8	343	75	21.9
Italian mothers:						
First month.....	140	5	3.6	272	6	2.2
Second month.....	134	10	7.5	261	12	4.6
Third month.....	134	11	8.2	259	17	6.6
Sixth month.....	133	23	17.3	253	30	11.9
Ninth month.....	131	29	22.1	250	55	22.0
Twelfth month.....	130	41	31.5	247	73	29.6

TABLE 45.—Prevalence of artificial feeding, by month of life of infant, and by literacy and nationality of mother; infants born in 1915 to Jewish, Polish, and Italian mothers.

Month of life of infant and nationality of mother.	Literate mothers.			Illiterate mothers.		
	Infant survivors.			Infant survivors.		
	Total.	Artificially fed.		Total.	Artificially fed.	
		Number.	Per cent.		Number.	Per cent.
Jewish mothers:						
First month.....	791	20	2.5	169	7	4.1
Second month.....	769	42	5.5	165	13	7.9
Third month.....	768	56	7.3	163	14	8.6
Sixth month.....	764	98	12.8	160	21	13.1
Ninth month.....	760	142	18.7	159	29	18.2
Twelfth month.....	754	201	26.7	158	39	24.7
Polish mothers:						
First month.....	339	18	5.3	265	11	3.9
Second month.....	316	26	8.2	273	16	5.9
Third month.....	314	38	12.1	272	22	8.1
Sixth month.....	305	54	17.7	264	34	12.9
Ninth month.....	290	61	21.0	254	38	15.0
Twelfth month.....	284	76	26.8	245	47	19.2
Italian mothers:						
First month.....	220	5	2.3	190	6	3.2
Second month.....	213	11	5.2	180	11	6.1
Third month.....	211	13	6.2	180	15	8.3
Sixth month.....	210	25	11.9	174	28	16.1
Ninth month.....	205	44	21.5	174	40	23.0
Twelfth month.....	204	57	27.9	171	57	33.3

TABLE 46.—Prevalence of mixed feeding and artificial feeding, by month of life of infant, and by place of employment and color and nationality of mother; infants born in 1915 to mothers employed within year after birth.

Place of employment and color and nationality of mother.	Per cent of infant survivors. ¹							
	Mixed fed.				Artificially fed.			
	Second month.	Third month.	Sixth month.	Ninth month.	Second month.	Third month.	Sixth month.	Ninth month.
Native white mothers:								
Employed at home.....	5.6	5.3	16.9	37.0	16.0	24.2	31.2	34.6
Employed away from home.....			26.7	38.2			44.8	45.8
Foreign-born white mothers:								
Employed at home.....	6.3	11.4	25.2	48.3	9.2	11.8	18.8	25.1
Employed away from home.....			28.7	58.9			28.7	24.2
Jewish mothers:								
Employed at home.....	6.7	13.9	36.2	60.0	4.7	6.0	12.3	20.0
Employed away from home.....								
Polish mothers:								
Employed at home.....	3.6	7.7	17.3	46.7	10.9	12.3	18.5	16.7
Employed away from home.....			31.5	65.0			20.4	13.8
Italian mothers:								
Employed at home.....	8.1	11.1	18.1	40.5	2.7	8.3	16.7	25.5
Employed away from home.....								
All other:								
Employed at home.....	5.8	9.3	22.0	37.1	19.4	24.0	31.4	37.6
Employed away from home.....								
Colored mothers:								
Employed at home.....		19.6	28.4	54.4		17.5	20.2	28.0
Employed away from home.....		46.8	48.6	53.3		31.5	33.1	39.1

¹ Each infant is classified according to type of feeding and mother's employment in each month, except that if a mother worked away from home following a period of work at home the latter is disregarded; a mother's employment is assumed to continue from the time it commenced until the end of infant's first year of life. Per cent not shown where base is less than 50.

TABLE 47.—Infant deaths per 1,000 live births, by cause of death and age; legitimate live births in 1915, Baltimore study, and total registered live births in 1915 in cities of 10,000 or more population in United States birth-registration area.

Age at death.	Infant mortality rate per 1,000 live births.							
	All causes.		Gastric and intestinal diseases.		Respiratory diseases.		Malformations.	
	Balti-more study.	Regis-tration cities. ¹	Balti-more study.	Regis-tration cities. ¹	Balti-more study.	Regis-tration cities. ¹	Balti-more study.	Regis-tration cities. ¹
Total.....	103.5	103.3	29.1	26.6	19.7	17.8	3.6	6.1
Under 3 months.....	56.0	60.4	5.9	9.0	6.7	6.3	3.0	5.4
Under 2 weeks.....	37.0	35.4	.7	1.0	1.9	1.3	2.5	4.1
2 weeks, under 1 month.....	7.1	8.0	.8	1.8	1.6	1.5		.6
1 month, under 2.....	6.0	9.2	1.4	3.0	1.5	1.9	.3	.4
2 months, under 3.....	5.8	7.8	3.0	3.1	1.8	1.6	.2	.3
3 months, under 6.....	19.4	18.1	9.3	8.0	5.1	4.1	.6	.4
6 months, under 9.....	15.1	14.0	7.4	5.9	4.5	3.9	.1	.2
9 months, under 12.....	13.0	10.9	6.5	3.8	3.4	3.5		.1

Age at death.	Infant mortality rate per 1,000 live births.					
	Early infancy.		Epidemic and other communicable diseases.		All other causes.	
	Balti-more study.	Regis-tration cities. ¹	Balti-more study.	Regis-tration cities. ¹	Balti-more study.	Regis-tration cities. ¹
Total.....	37.7	35.0	6.7	8.5	6.7	9.3
Under 3 months.....	35.4	32.0	1.9	2.8	3.1	4.9
Under 2 weeks.....	29.9	25.9	.8	.6	1.2	2.4
2 weeks, under 1 month.....	3.1	2.7	.4	.6	1.2	.9
1 month, under 2.....	1.8	2.1	.6	.9	.5	.9
2 months, under 3.....	.6	1.4	.1	.7	.3	.8
3 months, under 6.....	1.4	2.0	1.0	1.8	2.0	1.7
6 months, under 9.....	.7	.7	1.5	1.9	.8	1.4
9 months, under 12.....	.2	.3	2.2	2.0	.6	1.3

¹Cities of birth-registration area, 1915. Based on unpublished data furnished by U. S. Census.

TABLE 48.—*Infant deaths, by cause of death, with reference to classification numbers in International List of Causes of Death; deaths among legitimate live births in 1915, Baltimore study, and total deaths in United States death-registration area in 1915.*

Abridged International List No. ¹	Detailed International List No. ¹	Cause of death. ²	Deaths among infants born in Baltimore in 1915.		Infant deaths in death-registration area in 1915.	
			Number.	Per cent distribution.	Number.	Per cent distribution.
		All causes.....	1,117	100.0	148,561	100.0
		Gastric and intestinal diseases ³	314	28.1	34,394	23.2
24.....	102, 103.....	Diseases of the stomach.....	6	.5	2,193	1.5
25.....	104.....	Diarrhea and enteritis.....	308	27.6	32,201	21.7
		Respiratory diseases ⁴	213	19.1	23,886	16.1
20.....	89.....	Acute bronchitis.....	24	2.1	3,401	2.3
Part of 23.....	91.....	Broncho-pneumonia.....	149	13.3	13,904	9.4
22.....	92.....	Pneumonia.....	40	3.6	6,581	4.4
Part of 33.....	150.....	Malformations.....	39	3.5	9,327	6.3
		Early infancy.....	407	36.4	51,765	34.8
Part of 33.....	151[1].....	Premature birth.....	225	20.1	29,027	19.5
Part of 33.....	151[2], 152[2], 153.....	Congenital debility.....	138	12.4	16,824	11.3
Part of 37.....	152[1].....	Injuries at birth.....	44	3.9	5,914	4.0
Part of 37.....		Epidemic and other communicable diseases. ⁵	72	6.4	12,109	8.2
5.....	6.....	Measles.....	8	.7	965	.6
6.....	7.....	Scarlet fever.....	1	.1	146	.1
7.....	8.....	Whooping cough.....	18	1.6	3,119	2.1
8.....	9.....	Diphtheria and croup.....	4	.4	869	.6
9.....	10.....	Influenza.....	7	.6	982	.7
Part of 12.....	14.....	Dysentery.....	1	.1	491	.3
Part of 12.....	18.....	Erysipelas.....	4	.4	750	.5
Part of 37.....	24.....	Tetanus.....			299	.2
13.....	28, 29.....	Tuberculosis of the lungs.....	4	.4	851	.6
14.....	30.....	Tuberculous meningitis.....	10	.9	1,194	.8
15.....	31, 32, 33, 34, 35.....	Other forms of tuberculosis.....	1	.1	421	.3
Part of 37.....	37.....	Syphilis.....	14	1.3	2,022	1.4
35.....	155 to 186.....	External causes.....	10	.9	1,727	1.2
38.....	187, 188, 189.....	Diseases ill-defined or unknown.....	7	.6	2,943	2.0
		All other causes.....	55	4.9	12,420	8.4
17.....	61.....	Meningitis.....	10	.9	1,444	1.0
Part of 37.....	71.....	Convulsions.....	15	1.3	2,301	1.5
19.....	79.....	Organic diseases of the heart.....			590	.4
		Other.....	30	2.7	8,085	5.4

¹ The numbers indicate the classification in the abridged and the detailed lists, respectively, of the Manual of the International List of Causes of Death.

² The causes of death included in this list are those used by the U. S. Bureau of the Census (see Mortality Statistics, 1915, p. 442) in classifying the deaths of infants under 1 year. They are those causes of death or groups of causes which are most important at this age. The numbers of the detailed and abridged International Lists will facilitate their identification. In order to make discussion of the figures easier, these causes of death have been grouped in 8 main groups.

³ The term "gastric and intestinal diseases," as used in the tables and discussion, includes, as above shown, only the diseases of this type which are most important among infants; i. e., diseases of the stomach, diarrhea, and enteritis. It does not include all "diseases of the digestive system" as classified under this heading according to the detailed International List.

⁴ The term "respiratory diseases," as used in the tables and discussion, similarly includes only those of the respiratory diseases which are most important among infants; i. e., acute bronchitis, broncho-pneumonia, and pneumonia. It does not include all "diseases of the respiratory system" as classified under this heading according to the detailed International List.

⁵ The term "epidemic and other communicable diseases," as used in the tables and discussion, includes only those of this group which are most important among infants.

TABLE 49.—*Infant mortality rates, by cause of death, and by color and nativity of mother; live births in 1915.*

Cause of death.	Total deaths.		Deaths among infants born to mothers of specified color and nationality.							
	Number.	Infant mortality rate.	White.						Colored mothers.	
			Total.		Native.		Foreign born.		Number.	Infant mortality rate.
			Number.	Infant mortality rate.	Number.	Infant mortality rate.	Number.	Infant mortality rate.		
All causes.....	1,117	103.5	910	95.9	646	95.9	264	95.9	207	158.6
Gastric and intestinal diseases.	314	29.1	274	28.9	194	28.8	80	29.1	40	30.7
Diseases of the stomach.....	6	.6	5	.5	4	.6	1	.4	1	.8
Diarrhea and enteritis.....	308	28.5	269	28.3	190	28.2	79	28.7	39	29.9
Respiratory diseases.....	213	19.7	149	15.7	92	13.7	57	20.7	64	49.0
Acute bronchitis.....	24	2.2	13	1.4	7	1.0	6	2.2	11	8.4
Broncho-pneumonia.....	149	13.8	103	10.9	65	9.6	38	13.8	46	35.2
Pneumonia.....	40	3.7	33	3.5	20	3.0	13	4.7	7	5.4
Malformations.....	39	3.6	36	3.8	27	4.0	9	3.3	3	2.3
Early infancy.....	407	37.7	342	36.0	257	38.1	85	30.9	65	49.8
Premature birth.....	225	20.8	183	19.3	145	21.5	38	13.8	42	32.2
Congenital debility.....	138	12.8	119	12.5	81	12.0	38	13.8	19	14.6
Injuries at birth.....	44	4.1	40	4.2	31	4.6	9	3.3	4	3.1
Epidemic and other communicable diseases.....	72	6.7	50	5.3	32	4.7	18	6.5	22	16.9
Measles.....	8	.7	8	.8	5	.7	3	1.1	.....	.....
Scarlet fever.....	1	.1	1	.1	1	.1	.....	.....	.....	.....
Whooping cough.....	18	1.7	11	1.2	6	.9	5	1.8	7	5.4
Diphtheria and croup.....	4	.4	4	.4	1	.1	3	1.1	.....	.....
Influenza.....	7	.6	6	.6	5	.7	1	.4	1	.8
Dysentery.....	1	.1	1	.1	.....	.....	.....	.....	.....	.....
Erysipelas.....	4	.4	4	.4	.....	.3	2	.7	.....	.....
Tuberculosis of the lungs.....	4	.4	1	.1	1	.1	.....	.....	3	2.3
Tuberculous meningitis.....	10	.9	10	1.1	9	1.3	1	.4	.....	.....
Other forms of tuberculosis.....	1	.1	.....	.....	.....	.....	.....	.....	1	.8
Syphilis.....	14	1.3	4	.4	2	.3	2	.7	10	7.7
External causes.....	10	.9	7	.7	6	.9	1	.4	3	2.3
Diseases ill-defined or unknown.....	7	.6	6	.6	3	.4	3	1.1	1	.8
All other causes.....	55	5.1	46	4.8	35	5.2	11	4.0	9	6.9
Meningitis.....	10	.9	9	.9	8	1.2	1	.4	1	.9
Convulsions.....	15	1.4	10	1.1	7	1.0	3	1.1	5	3.8
Other.....	30	2.8	27	2.8	20	3.0	7	2.5	3	2.3

TABLE 50.—*Infant deaths, by cause of death and month of life; live births in 1915.*

Cause of death.	Deaths among infants born in 1915.												
	First.		Occurring in specified month of life.										Twelfth.
	Total.	Under 2 weeks.	2 weeks, under 1 month.	Second.	Third.	Fourth.	Fifth.	Sixth.	Sev. enth.	Eighth.	Ninth.	Tenth.		Eleventh.
All causes.....	1,117	477	77	65	63	62	71	76	56	51	49	42	49
Gastric and intestinal diseases.....	314	17	8	15	32	27	29	44	36	24	27	21	23
Disease of the stomach.....	6	1	1	1	3	2	2	1	1	1	1	1	1
Diarrhea and enteritis.....	308	16	7	14	31	25	28	44	35	24	27	20	22
Bacterial dysentery.....	213	87	20	16	19	21	17	17	12	20	14	12	11
Acute bronchitis.....	24	6	2	4	12	7	14	9	8	2	11	3	9
Broncho-pneumonia.....	149	20	11	7	12	17	14	12	8	15	13	10	2
Pertussis.....	40	11	4	4	5	3	3	3	3	2	2	1	2
Milk intolerance.....	39	27	27	3	2	3	1	3	4	1	1	1	1
Early infantile birth.....	497	357	322	19	7	5	5	5	4	3	1	1	1
Congenital debility.....	225	216	192	10	6	5	4	6	4	3	1	1	1
Injuries at birth.....	188	97	88	14	5	5	4	5	4	3	1	1	1
Meningitis and other communicable diseases.....	44	44	1	13	5	5	4	5	4	3	1	1	1
Measles.....	72	13	9	7	1	4	4	3	3	7	9	4	13
Scarlet fever.....	1	1	1	1	1	1	1	1	1	1	1	1	1
Whooping cough.....	18	1	1	1	1	1	1	1	1	1	1	1	1
Diphtheria and group.....	4	4	4	2	1	3	2	2	1	1	1	1	2
Pertussis.....	7	2	2	1	1	1	1	1	1	3	1	1	2
Dysentery.....	1	1	1	1	1	1	1	1	1	1	1	1	1
Typhoid.....	4	4	4	1	1	1	1	1	1	1	1	1	1
Tuberculosis of the lungs.....	4	4	4	1	1	1	1	1	1	1	1	1	1
Other tuberculous meningitis.....	10	10	10	1	1	1	1	1	1	1	1	1	1
Other forms of tuberculosis.....	1	1	1	1	1	1	1	1	1	1	1	1	1
Sepsis.....	14	7	3	2	1	1	1	1	1	1	1	1	1
Syphilis.....	10	10	10	1	1	1	1	1	1	1	1	1	1
External causes.....	10	2	1	1	2	1	1	1	2	1	2	1	1
Diseases ill-defined or unknown.....	7	3	1	1	2	1	1	1	1	1	2	1	1
All other causes.....	55	21	10	4	1	1	12	4	2	1	4	1	5
Meningitis.....	10	9	6	3	1	1	1	2	2	1	1	1	1
Convulsions.....	13	9	6	3	1	1	1	1	1	1	1	1	1
Other.....	30	12	4	3	1	1	7	1	1	4	1	1	3

TABLE 5A.—Infants deceased, by age on death, race of mother, and nationality of mother, with white and colored mothers.

Age at death.	Deaths among infants born to mothers of specified color and nationality.																
	White mothers.					Colored mothers.											
	Total infant deaths.		Native.			Foreign born.			Total.								
	Num-ber.	Per cent distrib-ution.	Num-ber.	Per cent distrib-ution.	Num-ber.	Per cent distrib-ution.	Polish.	Ital-ian.	Ger-man.	Irish, Eng-lish, Scotch, and Eng-lish-Cana-dian.	Bohe-mian.	Lithu-anian.	All other.	Num-ber.	Per cent distrib-ution.		
Total	1,117	100.0	910	100.0	648	100.0	264	100.0	49	26	30	15	10	13	10	207	100.0
Under 1 year	477	42.7	304	48.3	208	44.3	108	40.9	26	17	12	4	7	5	2	83	40.1
1 to 2 years	208	18.6	178	19.6	135	20.9	43	16.3	10	6	7	2	3	2	1	30	14.5
2 to 3 years	40	3.6	36	4.0	24	3.7	13	4.5	4	2	1	1	1	1	1	4	1.9
3 to 4 years	42	3.8	37	4.1	24	3.7	13	4.9	4	2	1	1	1	1	1	5	2.4
4 to 5 years	51	4.6	40	4.4	23	3.9	15	5.7	3	2	1	1	1	1	1	11	5.3
5 to 6 years	59	5.3	43	4.7	33	5.1	10	3.8	3	2	1	1	1	1	1	16	7.7
6 to 7 years	11	0.9	60	6.6	45	7.0	15	5.7	2	1	2	1	1	1	1	17	8.2
7 to 8 years	65	5.8	51	5.6	35	5.4	16	6.1	3	2	1	3	1	1	3	14	6.8
8 to 9 years	63	5.6	52	5.7	34	5.3	18	6.8	1	1	2	1	1	1	1	11	5.3
9 to 10 years	200	18.7	159	17.5	113	17.5	46	17.4	7	4	7	2	1	2	2	50	24.2
10 to 11 years	163	14.6	138	15.2	98	15.2	40	15.2	7	4	4	3	1	2	3	28	12.1
11 to 12 years	140	12.5	116	12.7	80	12.4	36	13.6	5	4	4	3	1	1	1	24	11.6

Per cent distrib-ution shown where base is less than 50.

TABLE 52.—*Infant deaths, by calendar month of death and cause; live births in 1915.*

Cause of death.	Deaths among infants born in 1915.											
	Occurring in specified calendar month.											
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Total.	1,117	81	112	89	75	68	144	140	100	91	76	76
All causes.....	314	7	9	11	9	10	78	83	49	30	10	12
Gastric and intestinal diseases.....	6	7	3	11	11	6	6	2	2	10	1	11
Diseases of the stomach.....	308	7	32	22	13	14	77	87	46	30	6	11
Diarrhea and enteritis.....	213	38	4	2	2	2	11	7	13	14	11	10
Respiratory diseases.....	24	16	22	18	11	2	11	6	11	3	7	12
Acute hemorrhitis.....	149	19	2	2	2	7	11	1	2	10	9	9
Broncho-pneumonia.....	46	7	4	4	2	4	3	1	2	4	2	5
Pneumonia.....	39	3	4	4	2	7	3	1	1	1	3	2
Malformations.....	407	24	60	41	40	30	94	99	82	83	45	32
Early infancy.....	292	6	27	35	21	20	16	15	21	17	25	14
Pre-natal birth.....	138	7	14	14	10	7	12	12	9	12	14	12
Congenital debility.....	73	10	16	3	4	5	4	2	2	5	6	6
Injuries at birth.....	72	7	10	6	5	2	6	6	4	4	3	7
Epidemic and other communicable diseases.....	1	1	3	2	2	2	8	6	1	1	1	1
Measles.....	1	1	3	2	2	2	8	6	1	1	1	1
Scarlet fever.....	18	1	1	1	2	4	4	1	1	1	1	2
Whooping cough.....	7	1	1	1	1	1	1	1	1	1	1	1
Diphtheria and croup.....	7	4	1	1	1	1	1	1	1	1	1	1
Influenza.....	7	2	1	1	1	1	1	1	1	1	1	1
Dysentery.....	4	1	1	1	1	1	1	1	1	1	1	1
Erysipelas.....	4	2	1	1	1	1	1	1	1	1	1	1
Tuberculosis of the lungs.....	10	1	1	1	1	1	2	1	1	1	1	1
Tuberculosis meningitis.....	14	2	1	1	1	1	2	1	1	2	2	2
Other forms of tuberculosis.....	1	1	2	1	1	1	2	1	3	2	2	2
Syphilis.....	14	1	2	1	1	1	2	3	1	2	2	2
External causes.....	7	2	1	1	1	1	2	3	2	1	1	1
Diseases ill-defined or unknown.....	65	6	3	1	3	4	8	6	2	6	5	3
All other causes.....	10	2	1	1	1	1	3	1	1	1	1	1
Meningitis.....	15	2	1	1	1	1	3	1	1	3	2	3
Convulsions.....	15	2	1	1	1	1	3	1	1	3	2	3
Other.....	30	4	2	3	3	2	1	4	1	3	2	3

Month of birth.	Live births.	Infant deaths from specified causes.										Diseases ill defined or unknown and all other causes.	
		Total infant deaths.		Gastro and intestinal diseases.		Respiratory diseases.		Malformations.	Early infancy.		Epidemic and other communicable diseases.		External causes.
		Number.	Infant mortality rate.	Number.	Infant mortality rate.	Number.	Infant mortality rate.		Number.	Infant mortality rate.			
Total	10,797	1,117	103.5	314	29.1	213	19.7	39	407	37.7	72	10	62
January	805	82	92.7	33	37.3	14	15.8	2	24	27.1	2	.....	7
February	801	97	108.9	36	40.4	21	23.0	2	26	28.2	2	.....	7
March	973	113	116.1	24	24.7	14	14.4	7	37	38.2	2	1	5
April	733	103	128.9	38	47.9	16	20.2	3	41	51.7	2	.....	5
May	878	88	105.3	25	24.2	20	24.2	4	36	43.5	2	.....	3
June	878	101	115.0	25	28.5	14	15.9	5	38	43.5	13	.....	3
July	999	97	97.1	21	21.0	31	31.0	4	30	30.0	6	3	3
August	936	78	83.3	19	20.3	17	18.2	1	29	28.8	6	1	4
September	909	78	85.8	18	19.8	15	17.0	.....	29	31.9	8	1	8
October	944	94	104.0	30	35.2	18	19.9	5	26	28.7	9	3	6
November	806	101	114.0	24	27.1	16	18.1	4	44	49.7	7	.....	6
December	915	85	92.9	26	28.4	16	17.5	2	29	31.7	5	.....	7

TABLE 54.—*Infant deaths from gastric and intestinal diseases per 1,000 live births, by age at death; Baltimore City, 1915 and 1916, cities of birth-registration area, 1915, and legitimate group in Baltimore study.*

Age at death.	Infant deaths from gastric and intestinal diseases per 1,000 live births.			
	Baltimore group. ¹	Cities of birth-registration area.	Baltimore City.	
			1915	1916
Total.....	29.1	26.7	29.9	32.7
Under 3 months.....	5.9	9.0	7.7	9.9
3 months, under 6.....	9.3	8.0	9.2	8.6
6 months, under 9.....	7.4	5.9	8.1	8.2
9 months, under 12.....	6.5	3.8	4.8	6.0

¹ In the Baltimore group the deaths under 1 year of age among infants born in 1915 occurred partly in 1915 and partly in 1916.

TABLE 55.—*Infant deaths from diarrhea and enteritis per 1,000 live births, by age at death; England and Wales, 1891 to 1917.*

Period.	Infant deaths from diarrhea and enteritis per 1,000 live births.		
	Age at death.		
	Under 3 months.	3-6 months.	6-12 months.
1891-1900.....	6.95	8.51	9.71
1901-1910.....	5.58	6.97	7.92
1911-1915.....	5.56	6.35	7.33
1916.....	3.53	3.50	3.55
1917.....	3.42	3.47	3.41

(Based on reports of registrar general of births, deaths, and marriages in England and Wales: 1915, ed. 8484; 1916, ed. 8869; 1917, cmd. 40.)

TABLE 56.—*Mean temperature and precipitation, by calendar month; Baltimore, 1915 and 1916.*

Calendar month.	Monthly mean temperature and total precipitation in Baltimore.			
	1915		1916	
	Mean temperature (* F.).	Precipitation (inches).	Mean temperature (* F.).	Precipitation (inches).
January.....	36.0	6.81	30.5	1.51
February.....	38.4	4.75	33.6	3.21
March.....	39.4	1.06	37.0	3.61
April.....	69.2	1.37	52.6	3.68
May.....	62.2	3.19	66.6	3.49
June.....	70.6	6.23	69.4	5.33
July.....	78.9	2.22	78.0	5.04
August.....	74.2	9.93	76.8	.83
September.....	71.5	2.30	67.6	1.82
October.....	59.6	3.96	57.6	1.61
November.....	47.0	1.59	47.3	1.97
December.....	35.4	3.08	36.0	3.94

Source: U. S. Department of Agriculture, Weather Bureau, monthly issues Climatological Data, Maryland and Delaware Section, 1915 and 1916, and Monthly Meteorological Summary, 1915 and 1916.

TABLE 57.—*Infant deaths from epidemic and communicable diseases per 1,000 live births, by age at death and cause of death; Baltimore City, 1915 and 1916, cities of birth-registration area, 1915, and legitimate group in Baltimore study.*

Cause of death	Infant deaths at specified age under 1 year per 1,000 live births.											
	Baltimore study.					Baltimore City.						
	Cities of the birth-registration area, 1915.					1916						
	Under 1 year.		Under 6 months, under 12.		Under 1 year.	Under 1 year.		Under 6 months, under 12.		Under 1 year.	Under 6 months, under 12.	
Epidemic and communicable diseases	6.7	2.9	3.7	8.5	4.6	3.9	8.9	5.9	3.0	9.1	5.5	3.6
Scarlet fever	1.3	1.3	.....	1.0	1.5	.....	.....	4.0	.....	.....	.....	.....
Diphtheria, tetanus, and communicable diseases	5.4	1.7	.....	6.9	3.1	3.7	4.4	1.9	2.5	6.1	1.9	3.2
Measles	1.7	.....	.....	1.9	1.2	.....	4.6	1.1	.....	.....	.....	.....
Whooping cough	.....	.....	.....	1.9	1.0	.....	1.0	.....	.....	2.0	.....	.....
Pneumonia of the lungs	1.4	.1	.....	.....	.....	.....	1.7	.....	.....	.....	.....	.....
Diarrhea	2.0	.8	1.9	3.5	1.6	1.9	2.2	1.0	1.2	2.1	.....	1.3

TABLE 58.—Monthly death rates, by type of feeding, and by color and nationality of mother; infants born in 1915.

Month of life of infant and nationality of mother.	Subsequent deaths.			Breast fed.			Mixed fed.			Artificially fed.			Not reported.			Not fed at once.				
	Infant survivors.	In month.		Infant survivors.	Subsequent deaths.		Infant survivors.	Subsequent deaths.		Infant survivors.	Subsequent deaths.		In year.	Subsequent deaths.						
		Num. ber.	Per 1,000.		Num. ber.	In year.		In month.	Per 1,000.		Num. ber.	In year.		In month.	Per 1,000.		Num. ber.	In year.	In month.	Per 1,000.
All mothers:																				
First month.....	10,797	103.5	477	44.2	9,283	570	139	15.0	281	12	42.7	958	240	53	55.3	6	4	269		
Second month.....	10,320	640	62.0	6.3	8,176	319	32	3.9	608	50	6.6	1,531	271	29	18.9	5	1			
Third month.....	10,255	575	56.1	6.3	7,400	228	18	2.4	844	52	6.1	2,006	294	37	18.4	5	1			
Fourth month.....	10,192	512	50.2	6.2	6,457	163	15	2.3	1,303	53	7	5.4	2,426	293	40	16.5	6	3		
Fifth month.....	10,130	450	44.4	7.1	5,905	133	20	3.4	1,614	49	9	5.6	2,605	265	41	15.7	6	3	1	
Sixth month.....	10,059	379	37.7	7.6	5,352	97	12	2.2	1,977	44	8	4.0	2,725	236	56	20.6	5	2		
Seventh month.....	9,983	303	30.4	5.6	4,215	65	7	1.7	2,845	46	9	3.2	2,919	191	40	13.7	4	1		
Eighth month.....	9,927	247	24.9	5.6	3,590	48	8	2.2	3,291	44	11	3.3	3,042	154	36	11.8	4	1		
Ninth month.....	9,871	191	19.3	5.2	2,825	31	8	2.8	3,890	39	12	3.1	3,153	121	31	9.8	3			
White mothers:																				
First month.....	9,492	910	95.9	394	41.5	8,137	446	107	13.1	245	28	9	36.7	188	40	46.0	6	4	234	
Second month.....	9,098	516	56.7	51	5.6	7,223	254	25	3.5	484	38	3	6.2	1,386	224	23	16.6	5		
Third month.....	9,047	465	51.4	52	5.7	6,568	179	14	2.1	654	37	6	9.2	1,850	248	32	17.6	5		
Fourth month.....	8,995	413	45.9	43	4.8	5,761	127	17	1.2	1,036	37	4	3.9	2,192	246	32	14.6	6		
Fifth month.....	8,952	370	41.3	56	6.3	5,288	108	17	3.2	1,304	36	6	4.6	2,354	223	32	13.6	6		
Sixth month.....	8,896	314	35.3	60	6.7	4,808	79	9	1.9	1,023	31	6	3.7	2,460	202	45	18.3	5		
Seventh month.....	8,896	254	28.7	45	5.1	3,827	54	4	1.0	2,782	32	6	2.5	2,627	167	35	13.3	4		
Eighth month.....	8,791	209	23.8	48	5.5	3,276	42	7	2.7	3,328	32	9	3.3	2,729	134	31	11.4	4		
Ninth month.....	8,743	161	18.4	45	5.1	2,587	26	7	2.7	3,328	30	11	3.3	2,825	105	27	9.6	3		
Native mothers:																				
First month.....	6,739	646	95.9	286	42.4	5,681	296	75	13.2	156	20	7	44.9	726	155	29	39.9	4	3	172
Second month.....	6,453	360	55.8	35	5.4	4,985	159	14	2.8	313	26	2	6.4	1,153	175	19	16.5	2		
Third month.....	6,418	325	50.6	34	5.3	4,497	109	15	1.1	403	25	5	12.4	1,517	191	24	16.8	2		
Fourth month.....	6,384	291	45.6	33	5.2	3,922	74	4	1.0	646	20	2	3.1	1,814	193	27	14.9	2		
Fifth month.....	6,351	258	40.6	43	6.8	3,588	64	12	3.3	823	23	3	3.6	1,958	170	28	14.4	2		
Sixth month.....	6,308	215	34.1	37	5.9	3,290	47	7	2.1	1,012	20	4	1.0	2,004	147	29	14.5	2		
Seventh month.....	6,271	178	28.4	34	5.4	2,675	31	5	1.1	1,472	24	4	2.7	2,123	123	27	12.7	1		
Eighth month.....	6,207	144	23.1	30	4.8	2,324	24	3	1.3	1,726	23	6	3.5	2,176	97	21	9.7	1		
Ninth month.....	6,207	114	18.4	34	5.5	1,815	13	3	1.6	2,092	23	10	4.8	2,243	78	21	9.4	1		
Foreign-born mothers:																				
First month.....	2,753	264	95.9	108	39.2	2,456	150	32	13.0	89	8	2	22.5	144	43	11	76.4	2	1	62
Second month.....	2,645	156	59.0	16	6.0	2,238	95	11	4.9	171	12	1	5.8	233	49	4	17.2	2		
Third month.....	2,629	140	53.3	18	6.8	2,071	70	9	4.2	231	12	1	4.0	303	57	8	26.4	2		
Fourth month.....	2,611	122	46.7	10	3.8	1,839	52	3	1.6	360	15	2	5.1	378	53	5	13.2	4		
Fifth month.....	2,601	112	43.1	13	5.0	1,703	44	3	2.0	481	13	2	6.2	416	53	4	20.0	4		
Sixth month.....	2,585	96	38.3	23	8.9	1,518	22	2	1.3	611	11	8	9.2	453	46	10	35.0	3		
Seventh month.....	2,565	76	29.6	11	4.3	1,132	22	2	1.9	606	9	5	2.2	504	44	8	18.1	3		
Eighth month.....	2,554	65	25.5	18	7.0	943	13	4	4.2	1,046	9	3	2.9	553	37	10	18.1	3		
Ninth month.....	2,536	47	18.5	11	4.3	716	4	4	5.6	1,286	7	1	4.8	562	27	6	10.3	3		

Jewish—															
961	49	51.0	26	27.1	878	25	1	8.0	39	1	1	1	1	1	16
935	23	24.6	3	3.2	803	14	2	2.5	76	3	1	1	1	1	1
932	20	21.5	1	1.1	746	11	1	1.6	115	3	1	1	1	1	1
931	19	20.4	3	3.2	638	10	1	1.7	193	3	1	1	1	1	1
928	16	17.2	3	3.2	581	8	1	1.7	232	2	1	1	1	1	1
925	13	13.1	1	1.1	514	6	1	1.1	240	4	1	1	1	1	1
924	12	13.0	1	1.1	366	6	1	1.1	419	4	1	1	1	1	1
920	8	8.7	3	4.3	207	4	2	3.7	471	2	2	1	1	1	1
920	8	8.7	3	3.3	206	3	2	3.7	542	2	2	1	1	1	1
Polish—															
695	102	163.2	35	56.0	559	64	13	23.3	17	5	5	1	1	1	19
690	67	113.0	20	32.0	477	42	7	14.7	38	8	8	1	1	1	1
677	54	106.0	10	17.0	373	33	7	14.7	47	7	7	1	1	1	1
677	52	90.4	2	3.0	430	21	2	3.3	74	9	1	1	1	1	1
676	46	80.8	6	10.3	492	18	2	5.0	92	3	2	1	1	1	1
675	46	80.8	11	13.2	369	13	1	2.7	111	6	2	1	1	1	1
674	43	69.7	7	12.2	270	17	1	4.6	88	2	2	1	1	1	1
671	28	50.8	7	12.7	241	6	1	4.1	111	3	3	1	1	1	1
671	21	38.6	3	5.5	183	5	1	5.4	259	3	3	1	1	1	1
Italian—															
412	86	87.4	17	41.3	372	19	5	13.4	18	1	1	1	1	1	11
395	19	48.1	2	5.1	345	13	2	5.7	25	6	6	1	1	1	1
393	17	43.3	4	10.2	327	10	2	6.1	38	1	1	1	1	1	1
389	15	33.4	1	2.6	302	7	2	7.0	59	2	2	1	1	1	1
388	12	30.9	2	2.2	287	7	2	2.2	77	2	2	1	1	1	1
386	10	25.9	3	7.8	254	5	1	3.9	77	2	2	1	1	1	1
383	7	18.3	3	2.6	201	3	1	2.6	117	1	1	1	1	1	1
382	7	18.3	1	2.6	161	1	1	2.6	141	1	1	1	1	1	1
381	5	13.1	1	2.6	125	1	1	2.6	172	1	1	1	1	1	1
All other—															
735	77	102.0	30	39.7	647	42	7	10.8	15	1	1	1	1	1	16
725	47	64.8	8	11.2	580	26	5	8.6	32	1	1	1	1	1	1
717	39	54.4	3	4.2	521	16	1	4.2	51	1	1	1	1	1	1
714	35	53.1	4	5.6	460	14	1	2.1	73	1	1	1	1	1	1
710	32	45.1	2	2.8	430	11	1	2.1	98	1	1	1	1	1	1
708	32	42.4	3	11.3	379	11	1	11.3	83	1	1	1	1	1	1
700	22	31.3	3	4.3	309	7	1	4.3	182	20	2	2	1	1	1
697	19	27.3	6	8.6	253	7	2	7.9	221	12	2	2	1	1	1
691	13	18.8	4	5.8	200	4	1	5.0	263	1	1	1	1	1	1
Colored mothers—															
1,305	207	158.6	83	63.6	146	124	32	27.9	36	6	6	3	3	3	35
1,223	124	101.5	14	11.5	933	65	7	7.3	124	12	12	1	1	1	1
1,208	110	91.1	11	9.1	832	49	4	4.8	190	15	15	2	2	2	2
1,197	99	82.7	16	15.0	696	35	3	11.5	267	16	16	3	3	3	3
1,178	80	67.9	12	12.7	617	25	3	4.9	310	13	13	3	3	3	3
1,163	65	55.9	16	13.8	544	18	3	5.5	354	13	13	2	2	2	2
1,147	49	42.7	11	9.6	388	11	3	7.7	467	14	14	3	3	3	3
1,136	38	33.5	8	7.0	314	6	1	3.2	599	12	12	2	2	2	2
1,128	30	26.6	6	5.3	238	5	1	4.2	562	9	9	1	1	1	1

Rate not shown where base is less than 100.

TABLE 59.—Monthly death rates, by type of feeding, and by earnings of father and color and nativity of mother, infants born in 1915.¹

Month of life of infant, earnings of father, and color and nativity of mother.	Total.		Breast fed.		Mixed fed.		Artificially fed.		Feeding not reported.	
	Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.		
		Number.	Number.		Per cent. ²	Number.		Per cent. ²		Number.	Per cent.^{2}
ALL MOTHERS.										
Earnings of father:										
Under \$450—										
First month.....	1,405	44	2.9	31	50	.....	110	11	10.0	3
Second month.....	1,451	17	1.2	10	114	.....	170	7	4.7	2
Third month.....	1,434	15	1.0	2	173	.....	220	6	2.7	2
Fourth month.....	1,419	11	.8	2	254	.....	281	8	2.8	2
Fifth month.....	1,408	18	1.3	6	308	.....	305	8	2.6	2
Sixth month.....	1,390	20	1.4	4	355	.....	328	13	4.0	2
Seventh month.....	1,370	14	1.0	1	488	.....	354	10	2.8	2
Eighth month.....	1,356	16	1.2	1	554	.....	372	11	3.0	2
Ninth month.....	1,340	6	.4	.....	626	.....	351	5	1.3	1
Tenth to twelfth month.....	1,334	32	2.4	10	.....	.....	376	15	4.0	1
\$450-\$649—										
First month.....	1,412	30	2.1	19	38	.....	95	9	.....	.....
Second month.....	1,382	9	.7	4	92	.....	152	7	2.6	.....
Third month.....	1,373	15	1.1	5	137	.....	207	7	3.4	.....
Fourth month.....	1,358	12	.9	2	214	.....	263	9	3.4	.....
Fifth month.....	1,346	7	.5	2	267	.....	276	4	1.4	.....
Sixth month.....	1,339	18	1.3	1	329	.....	285	16	5.6	.....
Seventh month.....	1,321	9	.7	553	476	.....	292	8	2.7	.....
Eighth month.....	1,312	6	.5	460	549	.....	303	2	.....	.....
Ninth month.....	1,306	6	.5	352	631	.....	323	4	1.2	.....
Tenth to twelfth month.....	1,300	22	1.7	2	630	.....	319	13	4.1	.....
\$650-\$949—										
First month.....	1,452	29	2.0	18	33	.....	124	7	5.6	1
Second month.....	1,423	12	.8	7	71	.....	203	4	2.0	.....
Third month.....	1,411	9	.6	2	92	.....	272	7	2.6	.....
Fourth month.....	1,402	11	.8	4	164	.....	324	6	1.9	.....
Fifth month.....	1,391	9	.6	849	207	.....	335	6	1.8	.....
Sixth month.....	1,382	5	.4	775	254	.....	353	3	.8	.....
Seventh month.....	1,377	14	1.0	603	398	.....	376	10	2.7	.....
Eighth month.....	1,363	12	.9	523	457	.....	383	9	2.3	.....
Ninth month.....	1,351	7	.5	426	539	.....	396	7	1.6	.....
Tenth to twelfth month.....	1,344	17	1.3	2	539	.....	370	11	2.6	.....

8650-8649—	2,362	51	2.2	2,078	37	1.8	60	4	4.5	22A	10	4.5
First month.....	2,311	9	.5	1,638	4	.2	113	1	.9	340	4	1.2
Second month.....	2,302	11	.5	1,684	4	.2	106	1	.4	632	7	1.5
Third month.....	2,291	14	.6	1,492	3	.2	251	1	.4	545	10	1.7
Fourth month.....	2,277	19	.8	1,367	8	.6	331	1	.3	579	10	1.8
Fifth month.....	2,268	24	.9	1,240	2	.1	413	1	.2	605	6	1.0
Sixth month.....	2,249	6	.3	1,001	1	.1	604	2	.8	644	5	.8
Seventh month.....	2,243	10	.4	852	2	.2	736	2	.3	665	6	.9
Eighth month.....	2,233	16	.7	682	3	.4	861	4	.5	690	9	1.3
Ninth month.....	2,217	32	1.4	679	7	1.0	857	4	.5	681	21	3.1
Tenth to twelfth month ¹												
8650-81,249—	2,265	25	1.1	1,928	16	.8	53	1	3.6	22A	8	3.6
First month.....	2,180	10	.5	1,711	5	.3	107	1	.8	360	5	1.4
Second month.....	2,170	6	.3	1,577	1	.1	119	1	.8	472	3	1.1
Third month.....	2,164	4	.2	1,383	1	.1	203	1	.6	576	5	1.1
Fourth month.....	2,160	7	.3	1,266	3	.2	262	1	.4	630	3	.5
Fifth month.....	2,153	12	.6	1,144	2	.2	345	1	.3	662	9	1.4
Sixth month.....	2,141	6	.3	932	2	.2	496	1	.2	711	1	.1
Seventh month.....	2,137	5	.2	786	1	.1	960	1	.2	747	4	.5
Eighth month.....	2,132	11	.5	621	2	.3	742	4	.5	767	5	.7
Ninth month.....	2,121	23	1.1	619	2	.3	738	3	.4	762	20	2.6
Tenth to twelfth month ¹												
81,250-81,549—	767	19	2.5	651	10	1.5	27	2	2.2	88	6	2.2
First month.....	744	3	.4	574	39	.2	39	1	.5	135	3	.5
Second month.....	745	1	.1	519	1	.2	55	1	.2	171	1	.2
Third month.....	744	2	.3	472	74	.2	74	1	.5	196	1	.5
Fourth month.....	742	2	.3	441	85	.2	85	1	.9	216	2	.9
Fifth month.....	740	3	.4	408	1	.2	108	1	.6	224	2	.9
Sixth month.....	737	3	.4	321	172	.4	172	1	.8	244	2	.8
Seventh month.....	734	1	.1	282	1	.4	192	1	.6	260	2	.8
Eighth month.....	731	1	.1	223	235	.9	235	1	.5	275	2	.7
Ninth month.....	728	6	.8	223	2	.9	235	3	.4	275	4	1.5
Tenth to twelfth month ¹												
81,550-81,849—	424	5	1.2	377	5	1.3	12	1	1.5	35	3	1.5
First month.....	424	1	.2	317	1	.3	27	1	.9	75	1	.9
Second month.....	424	1	.2	274	38	.8	38	1	.8	107	1	.8
Third month.....	424	1	.2	252	59	1.4	59	1	.8	127	1	.8
Fourth month.....	417	1	.2	207	67	1.6	67	1	.8	143	1	.8
Fifth month.....	417	1	.2	196	71	1.6	71	1	.8	150	1	.8
Sixth month.....	417	1	.2	156	91	1.6	91	1	.8	170	1	.8
Seventh month.....	417	1	.2	137	98	1.7	98	1	.8	182	1	.8
Eighth month.....	417	1	.2	109	112	1.7	112	1	.8	195	1	.8
Ninth month.....	417	1	.2	109	112	1.7	112	1	.8	195	1	.8
Tenth to twelfth month ¹												

1 Excludes 35 not fed (died at once).
 2 Not shown where base is less than 10.
 3 Figures are infant survivors at beginning of month; 500 are classified according to type of feeding in the ninth month; and deaths in tenth, eleventh, and twelfth months each of these groups. The rate shows the deaths in the 12 successive months per 1,000 survivors at the beginning of the tenth month.

TABLE 50. - Monthly death rates, by type of feeding, and by earnings of father and color and nativity of mother, infants born in 1915.—Continued.

Month of life of infant, earnings of father, and color and nativity of mother.	Total.		Breast fed.		Mixed fed.		Artificially fed.		Feeding not reported.		
	Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.
		Number.	Per cent. ^a		Number.	Per cent. ^a		Number.	Per cent. ^a		
ALL MOTHERS—continued.											
Earnings of father—Continued.											
No earnings—											
First month.....	201	2	1.0	168	1	.6	1	31	1	1	1
Second month.....	180	1	.8	131	1	.8	23	44	1	1	1
Third month.....	188	3	1.5	111	1	.9	34	83	2	1	1
Fourth month.....	195	4	2.1	92	2	2.1	44	89	7	1	1
Fifth month.....	191	7	3.7	81	4	4.9	46	64	7	1	1
Sixth month.....	184	9	4.9	74	5	6.8	52	58	7	1	1
Seventh month.....	175	5	2.9	56	1	1.8	63	56	3	1	1
Eighth month.....	170	1	.6	48	1	2.1	67	55	3	1	1
Ninth month.....	169	3	1.8	37	1	2.7	74	58	4	1	1
Tenth to twelfth months.....	169	5	3.0	37	2	5.4	74	58	4	1	1
Not reported—											
First month.....	210	3	1.4	176	2	1.1	7	27	1	1	1
Second month.....	207	4	1.9	135	1	.7	22	50	2	1	1
Third month.....	203	2	1.0	120	1	.8	30	82	2	1	1
Fourth month.....	201	3	1.5	106	1	.9	40	83	2	1	1
Fifth month.....	198	2	1.0	98	1	1.0	41	57	1	1	1
Sixth month.....	196	2	1.0	85	1	1.2	50	60	1	1	1
Seventh month.....	196	1	.5	67	1	1.5	57	72	1	1	1
Eighth month.....	196	4	2.1	62	1	1.6	59	75	3	1	1
Ninth month.....	191	4	2.1	43	1	2.3	70	78	3	1	1
Tenth to twelfth months.....	187	3	1.6	43	1	2.3	67	78	2	1	1
NATIVE WHITE MOTHERS.											
Earnings of father:											
Under \$890—											
First month.....	1,056	26	2.5	928	18	1.9	21	107	6	6.0	2
Second month.....	1,032	9	.9	814	1	.1	56	160	7	4.4	2
Third month.....	1,025	12	1.2	730	1	.1	46	208	6	2.9	1
Fourth month.....	1,011	10	1.0	622	1	.8	130	259	9	3.5	1
Fifth month.....	1,001	10	1.0	557	3	.5	169	275	6	2.2	1
Sixth month.....	991	12	1.2	507	1	.2	205	319	11	3.5	1
Seventh month.....	979	14	1.4	398	1	.3	300	246	13	5.3	1

Ninth month.....	958	4	1.9	264	2	.8	433	3	294	4	1.1	294
Tenth to twelfth months.....	954	18	1.9	264	2	.8	400	3	290	13	4.5	290
\$550-\$849—												
First month.....	2,568	49	1.9	2,227	31	1.4	60	4	280	13	4.6	1
Second month.....	2,519	13	1.9	1,971	6	.3	112	1	436	6	1.4	1
Third month.....	2,506	14	1.6	1,778	3	.2	147	1	581	11	1.9	1
Fourth month.....	2,492	16	1.6	1,552	4	.3	253	1	657	12	1.7	1
Fifth month.....	2,476	20	1.8	1,422	6	.4	333	1	721	13	1.8	1
Sixth month.....	2,456	9	1.4	1,304	2	.2	405	1	747	7	1.9	1
Seventh month.....	2,447	12	1.4	1,072	2	.2	592	1	783	11	1.4	1
Eighth month.....	2,435	14	1.4	890	2	.1	713	1	792	11	1.4	1
Ninth month.....	2,421	17	1.7	768	2	.3	847	3	806	12	1.5	1
Tenth to twelfth months.....	2,404	33	1.4	766	6	.8	844	5	794	22	2.8	1
\$850-\$1,249—												
First month.....	1,761	18	1.0	1,524	10	.7	41	1	196	7	3.6	1
Second month.....	1,743	8	1.0	1,347	5	.4	79	1	316	3	3.9	1
Third month.....	1,735	4	1.0	1,232	1	.2	85	1	419	4	1.0	1
Fourth month.....	1,731	2	1.1	1,078	3	.3	144	1	508	2	1.4	1
Fifth month.....	1,729	7	1.1	986	3	.3	191	1	551	3	1.5	1
Sixth month.....	1,722	10	1.6	897	2	.2	246	1	578	7	1.2	1
Seventh month.....	1,712	4	1.2	740	2	.3	356	1	615	1	1.2	1
Eighth month.....	1,708	4	1.2	646	2	.3	433	1	638	4	1.6	1
Ninth month.....	1,704	10	1.6	498	1	.2	554	4	651	4	1.6	1
Tenth to twelfth months.....	1,694	18	1.1	497	1	.2	550	3	646	15	2.3	1
\$1,250-\$1,849—												
First month.....	600	15	2.5	514	10	1.9	29	2	75	3	3	1
Second month.....	594	3	2.5	449	1	.2	24	1	121	3	2.5	1
Third month.....	591	1	2.5	404	1	.2	35	1	152	1	2.5	1
Fourth month.....	590	1	2.2	365	1	.2	46	1	179	1	2.2	1
Fifth month.....	589	3	2.2	345	1	.2	59	1	194	1	2.2	1
Sixth month.....	589	3	2.2	322	1	.3	63	1	202	2	2.2	1
Seventh month.....	586	3	2.5	259	1	.9	109	1	218	2	2.5	1
Eighth month.....	583	1	2.2	234	1	.4	119	1	230	1	2.2	1
Ninth month.....	582	1	2.2	188	1	.4	151	1	243	1	2.2	1
Tenth to twelfth months.....	582	6	1.0	188	2	1.1	151	1	243	4	1.6	1
\$1,850 and over—												
First month.....	360	5	1.1	320	5	1.6	11	1	29	1	1.1	1
Second month.....	355	3	1.1	267	2	.5	23	1	65	1	1.1	1
Third month.....	355	1	1.1	232	2	.5	30	1	93	1	1.1	1
Fourth month.....	354	1	1.1	196	1	.4	47	1	111	1	1.1	1
Fifth month.....	353	1	1.1	177	1	.4	53	1	123	1	1.1	1
Sixth month.....	353	1	1.1	171	1	.4	54	1	128	1	1.1	1
Seventh month.....	351	1	1.1	140	1	.4	68	1	145	1	1.1	1
Eighth month.....	351	1	1.1	123	1	.4	73	1	157	1	1.1	1
Ninth month.....	352	1	1.1	101	1	.4	83	1	168	1	1.1	1
Tenth to twelfth months.....	352	1	1.1	101	1	.4	83	1	168	1	1.1	1

1 Excludes 35 not fed (died at once).
 2 Not shown where base is less than 100.
 3 Figures are infant survivors at beginning of tenth month, who are classified according to type of feeding in the ninth month; and deaths in tenth, eleventh, and twelfth months of these groups. The rate shows the deaths in these three months per 1,000 survivors at the beginning of the tenth month.

TABLE 59.—Monthly death rates, by type of feeding, and by earnings of father and color and nativity of mother; infants born in 1915.—Continued.

Month of life of infant, earnings of father, and color and nativity of mother.	Totals.		Breast fed.		Mixed fed.		Artificially fed.		Feeding not reported.		
	Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.
		Number.	Per cent.		Number.	Per cent.		Number.	Per cent.		
NATIVE WHITE MOTHERS—con.											
Earnings of father—Continued											
No earnings—											
First month.....	86	1	66	1	6	19	23	1	1		
Second month.....	86	1	57	1	7	23	28	1	1		
Third month.....	85	1	70		9	33	32				
Fourth month.....	84	1	43		9	33	33	5			
Fifth month.....	83	5	41		13	28	28	2			
Sixth month.....	78	3	37	1	17	28	28	1			
Seventh month.....	75	1	30		19	37	37				
Eighth month.....	74		28		21	29	29				
Ninth month.....	74		24		21	29	29	1			
Tenth to twelfth months	74	2	24		21	29	29	1			
Not reported—											
First month.....	125	1	102	1	3	20	20				
Second month.....	124	1	80	1	11	33	33				
Third month.....	123	1	72		15	26	26	1			
Fourth month.....	123	2	66		17	36	36	2			
Fifth month.....	120	1	60		18	41	41	1			
Sixth month.....	119		53		24	42	42	1			
Seventh month.....	119		41		30	48	48				
Eighth month.....	119	3	37	2.5	31	51	51	2			
Ninth month.....	116	3	28	2.6	36	38	38	2			
Tenth to twelfth months	113	3	25	2.7	33	52	52	2			
FOREIGN-BORN WHITE MOTHERS.											
Earnings of father:											
Under \$450—											
First month.....	590	11	506	8	27	35	35	3	1		
Second month.....	538	6	455	5	44	44	44	1	2		
Third month.....	542	7	416	3	65	68	68	4	3		
Fourth month.....	545	1	362		90	90	90	1	3		
Fifth month.....	544	4	335		119	119	119	2	3		
Sixth month.....	540	9	294	1	142	142	142	6	5		
Seventh month.....	531	4	228		190	190	190	3	3		

Eight month.....	327	7	1.3	188	1	7	218	1	119	5	4.2	2	1
Ninth month.....	320	3	.6	145	5	7	253	3	121	2	1.7	1	1
Tenth to twelfth months	317	14	2.7	144	1	5	263	2	119	7	5.9	1	.....
\$450—\$549—													
First month.....	444	5	1.1	419	5	1.2	14	14	11	1	.....	.....	.....
Second month.....	439	3	.7	360	3	.5	26	.....	25	1	.....	.....	.....
Third month.....	436	4	.9	365	3	.8	39	.....	22	1	.....	.....	.....
Fourth month.....	432	4	.....	317	.....	.....	65	.....	47	.....	.....	.....	.....
Fifth month.....	432	.....	.....	299	.....	.....	94	.....	49	.....	.....	.....	.....
Sixth month.....	432	4	.9	263	.....	.....	110	1	64	.....	.....	.....	.....
Seventh month.....	428	.....	.....	204	.....	.....	168	.....	56	.....	.....	.....	.....
Eighth month.....	428	2	.5	161	.....	.....	199	1	68	.....	.....	.....	.....
Ninth month.....	426	.....	.....	120	.....	.....	284	.....	72	.....	.....	.....	.....
Tenth to twelfth months	426	5	1.2	120	2	1.7	294	1	72	2	.....	.....	.....
\$550—\$649—													
First month.....	977	18	1.8	903	14	1.6	29	2	45	2	.....	.....	.....
Second.....	969	5	.5	829	4	.5	76	.....	76	1	.....	.....	.....
Third month.....	964	4	.4	767	3	.4	82	.....	105	1	.....	.....	.....
Fourth month.....	950	6	.6	697	3	.3	118	1	135	3	1.0	.....	.....
Fifth month.....	944	7	.7	647	3	.5	152	.....	145	2	2.1	.....	.....
Sixth month.....	937	4	.4	583	1	.2	197	1	157	3	1.3	.....	.....
Seventh month.....	933	4	.4	437	.....	.....	321	.....	175	3	1.7	.....	.....
Eighth month.....	929	8	.9	367	3	.8	372	1	190	4	2.1	.....	.....
Ninth month.....	921	5	.5	279	1	.4	441	.....	201	3	1.5	.....	.....
Tenth to twelfth months	916	13	1.4	278	2	.7	440	3	198	8	4.0	.....	.....
\$650 and over—													
First month.....	609	9	1.5	550	4	.7	17	.....	41	4	.....	.....	.....
Second month.....	600	1	.2	501	.....	.....	39	.....	59	1	.....	.....	.....
Third month.....	599	2	.3	466	.....	.....	56	.....	76	1	.....	.....	.....
Fourth month.....	597	2	.3	415	1	.2	89	.....	92	1	.....	.....	.....
Fifth month.....	595	.....	.....	374	.....	.....	111	.....	109	.....	.....	.....	.....
Sixth month.....	595	2	.3	331	.....	.....	145	.....	118	2	1.7	.....	.....
Seventh month.....	593	.....	.....	250	.....	.....	205	.....	127	.....	.....	.....	.....
Eighth month.....	593	1	.2	232	.....	.....	252	.....	151	.....	.....	.....	.....
Ninth month.....	592	2	.3	155	1	.6	274	.....	182	1	.6	.....	.....
Tenth to twelfth months	590	3	.5	154	.....	.....	274	.....	161	3	1.8	.....	.....
No earnings—													
First month.....	47	1	.....	40	.....	.....	6	.....	7	1	.....	.....	.....
Second month.....	46	.....	.....	31	.....	.....	7	.....	9	.....	.....	.....	.....
Third month.....	46	.....	.....	28	.....	.....	11	.....	11	.....	.....	.....	.....
Fourth month.....	46	1	.....	23	.....	.....	10	1	13	.....	.....	.....	.....
Fifth month.....	45	1	.....	20	.....	.....	9	.....	16	.....	.....	.....	.....
Sixth month.....	44	4	.....	20	.....	.....	9	1	15	3	.....	.....	.....
Seventh month.....	40	2	.....	14	.....	.....	13	.....	13	1	.....	.....	.....
Eighth month.....	38	.....	.....	9	.....	.....	16	.....	13	.....	.....	.....	.....
Ninth month.....	38	.....	.....	6	.....	.....	19	.....	13	.....	.....	.....	.....
Tenth to twelfth months	38	1	.....	6	.....	.....	19	.....	13	1	.....	.....	.....

Figures are infant survivors at beginning of tenth month, who are classified according to type of feeding in the ninth month, and deaths in tenth, eleventh, and twelfth months of these groups. The rate shows the deaths in these three months per 1,000 survivors at the beginning of the tenth month.

TABLE 59.—Monthly death rates, by type of feeding, and by earnings of father and color and nativity of mother; infants born in 1915.—Continued.

Month of life of infant, earnings of father, and color and nativity of mother.	Total.		Breast fed.		Mixed fed.		Artificially fed.		Feeding not reported.		
	Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.		Infant survivors.	Deaths in month.
		Number.	Per cent.		Number.	Per cent.		Number.	Per cent.			Number.	Per cent.
NATIVE WHITE MOTHERS—CON.											
Earnings of father—Continued											
No earnings—											
First month.	86	1	66	1	6	19	22	1	1		
Second month.	86	1	57		7	28	22	1			
Third month.	85	1	50		9	32	28	5			
Fourth month.	84	1	43		9	33	28	2			
Fifth month.	83	5	41		13	26	28	3			
Sixth month.	78	3	37		17	28	27	1			
Seventh month.	75	1	30		19	27	27	1			
Eighth month.	74		28		21	29	29	1			
Ninth month.	74		24		21	29	29	1			
Tenth to twelfth month.	74	2	24		21	29	29	1			
Not reported—											
First month.	125	1	102	1.0	3	20	33				
Second month.	124	1	80	1	11	33	33				
Third month.	123	1	72		15	29	38	1			
Fourth month.	122	2	66		17	38	38	2			
Fifth month.	120	1	60		18	41	41	1			
Sixth month.	119		53		24	42	42	1			
Seventh month.	119		41		30	49	49	2			
Eighth month.	119	3	37	2.5	31	51	51	2			
Ninth month.	116	3	28	2.6	3	32	32	2			
Tenth to twelfth month.	113	3	28	2.7	33	33	33	2			
FOREIGN-BORN WHITE MOTHERS.											
Earnings of father:											
Under \$450—											
First month.	599	11	506	1.6	27	35	67	3			1
Second month.	558	6	455	1.1	44	57	69	4			2
Third month.	552	7	416	1.3	65	65	69	4			3
Fourth month.	545	1	362		99	52	52	1			2
Fifth month.	544	4	325	.6	110	86	86	1			2
Sixth month.	540	9	294	1.7	142	102	102	6			3
Seventh month.	531	4	228	.8	190	111	111	3			2

8480-8549—	444	5	1.1	419	5	1.2	14	11				
First month.....	459	3	.7	380	2	.5	26	23	1			
Second month.....	436	4	.9	365	3	.8	30	32	1			
Third month.....	432	4		317	3		68	47				
Fourth month.....	432	4		299	3		84	49				
Fifth month.....	428	4	.9	268	1	.9	110	54	3			
Sixth month.....	428	2	.5	204	1	.6	168	66	1			
Seventh month.....	426	5	1.2	161	1		199	68	1			
Eighth month.....	426	5		120	2	1.7	234	72	2			
Ninth month.....				120	2	.4	254	72	2			
Tenth to twelfth months.....												
8550-8599—	977	18	1.8	903	14	1.6	29	45	2			
First month.....	959	5	.5	829	4	.5	54	76	1			
Second.....	954	4	.4	767	3	.4	82	76	1			
Third month.....	950	6	.6	697	2	.3	118	105	1	1.0		
Fourth month.....	944	7	.7	647	3	.5	163	135	3	2.2		
Fifth month.....	937	4	.4	583	1	.2	197	145	3	2.1		
Sixth month.....	933	4	.4	437	1	.3	321	157	2	1.3		
Seventh month.....	929	8	.9	367	3	.8	373	175	3	1.7		
Eighth month.....	921	5	.5	279	1	.4	441	190	3	2.1		
Ninth month.....	916	13	1.4	278	2	.7	440	201	4	1.5		
Tenth to twelfth months.....								198	8	4.0		
8600 and over—	609	9	1.5	550	4	.7	17	41	4			
First month.....	600	1	.2	501	1		39	59	1			
Second month.....	599	2	.3	466	1		56	76	1			
Third month.....	597	2	.3	415	1	.2	89	92	1			
Fourth month.....	595	2		374	1		111	109	1			
Fifth month.....	595	2	.3	331	1		145	118	2	1.7		
Sixth month.....	593	1	.2	250	1	.5	205	137	1			
Seventh month.....	593	2	.3	209	1	.6	232	151	1			
Eighth month.....	592	3	.5	154	1		274	162	1	.6		
Ninth month.....								161	3	1.8		
Tenth to twelfth months.....								161	3			
No earnings—	47	1		40				7	1			
First month.....	46			31			6	9				
Second month.....	46	1		28			7	11				
Third month.....	46	1		23			10	13				
Fourth month.....	45	1		20			9	16				
Fifth month.....	44	4		20			9	13	3			
Sixth month.....	40	2		14	1		13	15	1			
Seventh month.....	38			9			16	13				
Eighth month.....	38			6			19	13				
Ninth month.....	34	1		6			19	13	1			
Tenth to twelfth months.....								13				

Figures are infant survivors at beginning of tenth month, who are classified according to type of feeding in the ninth month, and deaths in tenth, eleventh, and twelfth months of these groups. The ratio shows the deaths in these three months per 1,000 survivors at the beginning of the tenth month.

TABLE 59.—*Monthly death rates, by type of feeding, and by earnings of father and color and nativity of mother; infants born in 1915*—Concluded.

Month of life of infant, earnings of father, and color and nativity of mother.	Total.		Breast fed.		Mixed fed.		Artificially fed.		Feeding not reported.	
	Deaths in month.		Deaths in month.		Deaths in month.		Deaths in month.		Deaths in month.	
	Infant survivors.	Number.	Infant survivors.	Number.	Infant survivors.	Number.	Infant survivors.	Number.	Infant survivors.	Number.
FOREIGN-BORN WHITE MOTHERS—continued.										
Earnings of father—Continued.										
Not reported—										
First month.....	45	2	28	1	2	2	6	1	9	1
Second month.....	43	1	32	1	2	9	2	1	2	1
Third month.....	42	1	29	1	2	2	10	1	9	1
Fourth month.....	41	1	25	1	6	6	9	1	9	1
Fifth month.....	41	1	25	1	6	8	9	1	1	1
Sixth month.....	40	1	22	1	8	8	10	1	12	1
Seventh month.....	40	1	19	1	9	9	12	1	9	1
Eighth month.....	39	1	18	1	12	9	12	1	12	1
Ninth month.....	39	1	11	1	15	15	13	1	13	1
Tenth to twelfth months	38	1	10	1	15	15	13	1	13	1
COLORED MOTHERS.										
Earnings of fathers:										
Under \$450—										
First month.....	489	16	444	12	14	14	31	4	48	4
Second month.....	478	6	374	5	48	48	51	1	51	1
Third month.....	467	2	315	1	75	75	76	1	76	1
Fourth month.....	464	6	258	2	105	105	101	4	101	4
Fifth month.....	458	6	227	1	122	122	109	4	109	4
Sixth month.....	452	6	202	2	135	135	114	5	114	5
Seventh month.....	444	3	144	2	176	176	124	2	124	2
Eighth month.....	441	4	115	1	191	191	135	4	135	4
Ninth month.....	437	2	85	3	213	213	139	2	139	2
Tenth to twelfth months	435	11	85	3	213	213	137	4	137	4
\$450—\$549—										
First month.....	347	16	314	7	12	12	21	7	21	7
Second month.....	331	2	270	1	4	4	31	1	31	1
Third month.....	329	4	242	2	6	6	45	1	45	1
Fourth month.....	325	6	204	2	10	10	65	3	65	3
Fifth month.....	319	5	178	1	81	81	60	2	60	2
Sixth month.....	314	5	159	1	91	91	64	2	64	2

309	Seventh month	2	6.5	110	.....	130	.....	69	.....	1	.....
307	Eighth month	2	6.7	68	.....	147	.....	72	.....	1	.....
306	Ninth month	3	1.0	70	.....	157	.....	73	.....	1	.....
305	Tenth month	3	1.6	69	.....	166	.....	77	.....	2	.....
304	Year to twelfth month*	6	2.0	69	.....	166	.....	77	.....	2	.....
303	First year	15	4.6	300	.....	7	.....	29	.....	2	.....
311	Second month	4	1.9	243	.....	26	.....	43	.....	2	.....
307	Third month	2	1.9	223	.....	17	.....	45	.....	2	.....
306	Fourth month	4	1.3	189	.....	64	.....	56	.....	2	.....
301	Fifth month	3	1.0	179	.....	1	.....	60	.....	2	.....
308	Sixth month	3	1.0	182	.....	60	.....	64	.....	2	.....
307	Seventh month	4	1.3	115	.....	110	.....	72	.....	1	.....
303	Eighth month	1	.....	69	.....	121	.....	79	.....	1	.....
303	Ninth month	1	.....	72	.....	123	.....	82	.....	1	.....
302	Tenth to twelfth month*	5	1.7	72	.....	129	.....	81	.....	3	.....
No averages											
68	First month	1	.....	62	.....	1	.....	5	.....	.....	.....
67	Second month	1	.....	43	.....	11	.....	12	.....	.....	.....
67	Third month	2	.....	33	.....	20	.....	14	.....	.....	.....
65	Fourth month	2	.....	24	.....	25	.....	14	.....	1	.....
63	Fifth month	1	.....	20	.....	28	.....	15	.....	.....	.....
62	Sixth month	2	.....	17	.....	28	.....	15	.....	.....	.....
60	Seventh month	2	.....	12	.....	33	.....	15	.....	.....	.....
58	Eighth month	1	.....	11	.....	33	.....	15	.....	1	.....
57	Ninth month	1	.....	7	.....	34	.....	16	.....	.....	.....
57	Tenth to twelfth month*	2	.....	7	.....	34	.....	16	.....	.....	.....
No averages											
40	First month	2	.....	36	.....	2	.....	2	.....	.....	.....
38	Second month	2	.....	29	.....	6	.....	8	.....	.....	.....
38	Third month	1	.....	16	.....	13	.....	6	.....	.....	.....
36	Fourth month	1	.....	12	.....	17	.....	6	.....	.....	.....
37	Fifth month	1	.....	13	.....	17	.....	7	.....	.....	.....
37	Sixth month	1	.....	11	.....	18	.....	8	.....	.....	.....
37	Seventh month	1	.....	7	.....	18	.....	12	.....	.....	.....
36	Eighth month	1	.....	4	.....	19	.....	12	.....	1	.....
36	Ninth month	1	.....	4	.....	19	.....	13	.....	.....	.....
36	Tenth to twelfth month*	1	.....	4	.....	19	.....	13	.....	.....	.....

* These are not averages, but are based on the number of survivors at the beginning of the month. The rate shows the deaths in these three months per 1,000 survivors at the beginning of the month.

TABLE 60.—Computed infant mortality rates, by type of feeding, and by earnings of father and color and nativity of mother, infants born in 1915.

Earnings of father and color and nativity of mother.	Breast-fed infants.				Mixed-fed infants.				Artificially-fed infants.			
	Number.		Total months of feeding. ¹	Com-puted infant mortality rate. ²	Number.		Total months of feeding. ¹	Com-puted infant mortality rate. ²	Number.		Total months of feeding. ¹	Com-puted infant mortality rate. ²
	First month.	Ninth month.			First month.	Ninth month.			First month.	Ninth month.		
All mothers.....	9,283	2,826	.....	43.3	281	3,860	.....	87.4	968	3,183	.....	191.4
Earnings of father:												
Under \$500.....	2,011	684	14,422	61.8	98	1,287	5,655	87.8	205	704	4,717	310.1
\$500-999.....	2,372	1,106	19,825	44.1	68	1,740	2,740	168.5	248	1,070	7,402	184.3
\$1,000-1,999.....	1,628	621	11,260	29.5	53	1,042	2,017	64.6	224	272	6,149	117.3
\$2,000-41,999.....	641	226	3,691	28.2	27	582	687	91.9	68	104	1,811	130.1
\$1,000 and over.....	377	109	2,004	13.3	12	112	875	.....	35	108	1,474	27.5
No earnings.....	168	47	798	(³)	7	74	404	(³)	31	48	1,473	(³)
Not reported.....	176	48	882	(³)	7	70	375	(³)	27	78	684	(³)
Native white mothers.....	5,081	1,871	.....	83.7	156	2,082	.....	85.8	726	2,248	.....	100.8
Earnings of father:												
Under \$500.....	928	264	5,150	38.0	21	400	1,717	107.0	107	284	2,149	289.9
\$500-999.....	2,227	768	13,054	38.0	60	847	3,462	89.3	280	806	5,833	178.8
\$1,000-1,999.....	1,534	498	8,958	20.2	41	547	2,127	48.4	196	551	4,472	109.6
\$2,000 and over.....	66	24	4,376	31.1	31	284	1,051	68.7	104	411	2,633	77.3
No earnings.....	102	28	588	(³)	3	36	185	(³)	19	29	246	(³)
Not reported.....	2,456	716	.....	50.2	89	1,286	.....	61.0	144	582	.....	232.1
Foreign-born white mothers.....												
Earnings of father:												
Under \$500.....	926	265	5,472	63.8	41	487	2,089	35.1	46	198	1,196	274.1
\$500-999.....	608	272	5,459	31.1	29	441	1,768	101.3	45	201	1,229	148.9
\$1,000 and over.....	580	156	3,261	26.9	17	275	1,188	17.9	41	102	1,645	108.7
No earnings.....	60	6	191	(³)	.....	.....	89	(³)	7	13	110	(³)
Not reported.....	28	11	219	(³)	2	16	89	(³)	5	13	89	(³)
Colored mothers.....	1,146	288	.....	90.2	26	562	.....	146.8	88	328	.....	347.3
Earnings of father:												
Under \$500.....	758	156	2,800	91.4	26	370	1,839	140.4	62	217	1,372	387.9
\$500 and over.....	380	72	1,562	88.0	7	139	635	220.0	20	62	1,034	262.4
No earnings.....	62	7	221	(³)	1	34	214	(³)	5	16	122	(³)
Not reported.....	36	4	135	(³)	2	19	131	(³)	2	13	74	(³)

¹ For first nine months of life only. ² Per 1,000 infants fed. For method of computation, see Appendix V, p. 199. ³ Rate not computed.

TABLE 61.—Computed infant mortality rates, by type of feeding, and by nationality of mother; infants born in 1915 to foreign-born white mothers.

Nationality of mother.	Breast-fed infants.			Mixed-fed infants.			Artificially-fed infants.			
	Number.		Total months of feeding. ¹	Number.		Total months of feeding. ¹	Number.		Total months of feeding. ¹	
	First month.	Ninth month.		First month.	Ninth month.		First month.	Ninth month.		
Foreign-born white mothers.....	2,456	716	.....	89	1,296	.....	144	568	.....	263.1
Jewish.....	578	206	5,029	39	542	2,377	27	171	944	137.2
Polish.....	599	185	3,446	17	259	1,089	26	90	686	283.3
Italian.....	372	135	2,379	18	172	697	11	64	423	132.9
All others.....	647	200	3,568	15	263	805	77	236	1,317	200.5

¹ For first nine months of life only.

² Per 1,000 infants fed. For method of computation, see Appendix V, p. —.

TABLE 62.—*Monthly death rates, by type of feeding, month of life and cause of death; infants born in 1915.*

Month of life.	Deaths in month from specified causes per 1,000 survivors fed in specified way.							
	Gastric and intestinal diseases.				All other causes.			
	Total.	Breast fed.	Mixed fed.	Artificially fed.	Total.	Breast fed.	Mixed fed.	Artificially fed.
First.....	1.6	1.3	7.1	3.1	42.6	13.7	35.6	52.1
Second.....	1.5	.9	.....	5.2	4.8	3.1	6.6	13.7
Third.....	3.1	.8	5.9	10.5	3.0	1.6	3.6	8.0
Fourth.....	2.6	.2	3.1	9.1	3.4	2.2	2.3	7.4
Fifth.....	2.9	.3	2.5	8.4	4.1	3.0	3.1	7.3
Sixth.....	4.4	.6	3.1	13.9	2.2	1.7	5.1	6.6
Seventh.....	3.6	.5	1.1	10.6	2.0	1.2	2.1	3.1
Eighth.....	2.4	.3	1.2	5.9	2.2	1.9	2.1	5.9
Ninth.....	2.0	.4	1.3	4.4	3.1	2.5	1.8	5.4
Tenth.....	2.7	1.0	.7	6.6	2.2	2.4	.9	3.9

TABLE 63.—*Computed mortality rates for first 10 months of life, by cause of death of infant and color of mother; infants born in 1915.*

Cause of death of infant and color of mother.	Computed deaths in first 10 months of life per 1,000 infants.		
	Breast fed.	Mixed fed.	Artificially fed.
All mothers:			
Gastric and intestinal diseases.....	6.3	24.4	75.1
All other causes.....	32.9	59.5	109.8
White mothers:			
Gastric and intestinal diseases.....	5.9	22.3	75.5
All other causes.....	23.4	51.2	99.3
Colored mothers:			
Gastric and intestinal diseases.....	8.0	41.6	72.7
All other causes.....	67.1	99.7	290.7

TABLE 64.—*Death rates from each month to end of first year, by month in which artificial feeding began; infants born in 1915 and artificially fed during some part of first year of life.*

Month in which artificial feeding began.	Per cent of subsequent deaths among survivors at beginning of specified month of life.							
	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.
First.....	20.7	18.7	16.4	13.8	11.9	9.6	7.4	6.4
Second.....	13.3	12.4	11.2	9.9	8.6	6.9	5.4	3.3
Third.....	(1)	10.6	9.7	8.8	7.5	6.0	5.6	4.3
Fourth.....	(1)	(1)	8.0	8.0	6.6	3.9	3.0	2.1
Fifth.....	(1)	(1)	(1)	5.5	5.1	3.3	3.3	2.4
Sixth.....	(1)	(1)	(1)	(1)	7.3	7.3	5.0	4.4
Seventh.....	(1)	(1)	(1)	(1)	(1)	4.4	3.6	2.3
Eighth.....	(1)	(1)	(1)	(1)	(1)	(1)	1.8	1.8
Ninth.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2.1
After ninth ¹	2.8	2.4	2.2	2.0	1.7	1.5	1.3	1.1

¹ Since the basis of classification requires that all infants of the several groups shall be alive at the beginning of the month when first artificially fed, rates for subsequent deaths among survivors at beginning of previous month are not shown.

² Computed from monthly rates for breast-fed infants.

TABLE 65.—*Computed (annual) infant mortality rates, by month in which artificial feeding began; infants born in 1915.*

Month of life in which exclusively artificial feeding began.	Infants whose artificial feeding began in stated month.	Computed (annual) infant mortality rates per 1,000 fed. ¹	Month of life in which exclusively artificial feeding began.	Infants whose artificial feeding began in stated month.	Computed (annual) infant mortality rates per 1,000 fed. ¹
First.....	952	251.1	Seventh.....	250	73.3
Second.....	622	170.5	Eighth.....	163	49.8
Third.....	508	125.5	Ninth.....	146	53.6
Fourth.....	461	106.3	Tenth or eleventh.....	384	48.2
Fifth.....	317	79.3	Twelfth.....	157	(?)
Sixth.....	165	99.6			

¹ For computation of annual rate it is assumed that during month next preceding the month in which artificial feeding began, the infants were mixed fed and that during earlier months they were breast fed. Computations are based on monthly death rates for breast or mixed fed infants, Table 58, and on the per cent of subsequent deaths among survivors at the beginning of the months in which artificial feeding began, Table 64.

² Data not available for estimate.

TABLE 66.—*Monthly death rates, by month of life, and by month in which artificial feeding began; infants born in 1915, and artificially fed.*

Month of life.	Monthly death rates per 1,000 infants whose artificial feeding began in specified month.										
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.
First.....	55.7										
Second.....	24.5	11.3									
Third.....	27.4	13.0	9.8								
Fourth.....	30.5	14.8	9.9								
Fifth.....	21.8	13.4	14.1	15.2	4.6						
Sixth.....	24.7	18.6	16.3	28.6	18.5						
Seventh.....	24.1	15.5	4.1	9.1		24.2	8.0				
Eighth.....	10.4	22.8	14.6	9.2	9.4	6.2	4.0				
Ninth.....	15.7	12.6	12.7	4.6		12.5	4.0	6.1			
Tenth.....	18.7	5.5	8.5	9.3	4.8	6.3	24.4	6.2	6.8		
Eleventh.....	12.2	12.8	15.1	4.7	9.6	6.4	4.2	6.2		14.6	5.6
Twelfth.....	19.3	1.9	6.6	2.4	9.7	19.2			13.8		5.6

TABLE 67.—*Weaning before end of first year of life, by color and nationality of mother; infants born in 1915 and surviving at one year.*

Color and nationality of mother.	Infants born in 1915 and surviving at 1 year of age.		
	Total.	Completely weaned from breast.	
		Number.	Per cent. ¹
Total.....	9,680	3,567	36.8
White mothers.....	8,582	3,193	37.2
Native.....	6,063	2,449	40.2
Foreign born.....	2,499	744	29.9
Jewish.....	912	240	26.3
Polish.....	523	120	22.9
Italian.....	376	114	30.3
German.....	284	114	39.6
Irish, English, Scotch, and English-Canadian ²	117	50	42.7
Bohemian.....	97	28	
Lithuanian.....	88	40	
All other ³	88	38	
Colored mothers.....	1,098	374	34.1

¹ Not shown where base is less than 100.

² Includes: 85 Irish, 17 English, 8 English-Canadian, and 7 Scotch

³ Includes: 19 Russian, 17 Greek, 11 Magyar, 8 Norwegian, 5 Serbian, 5 French, 5 Slovak, 4 Rumanian, 3 Ruthenian, 3 French-Canadian, 2 Dutch, 2 Slavic (n. o. s.), 2 Swedish, 1 Arabian, and 1 Danish.

TABLE 68.—Weaning before end of first year of life, by earnings of father; infants born in 1915 and surviving at one year.

Earnings of father.	Infants born in 1915 and surviving at 1 year of age.		
	Total.	Completely weaned from breast.	
		Number.	Percent.
Total.....	9,680	3,567	36.9
Under \$450.....	1,302	439	33.7
\$450-\$549.....	1,278	377	29.5
\$550-\$649.....	1,327	429	32.3
\$650-\$849.....	2,185	763	34.9
\$850-\$1,049.....	1,481	530	35.8
\$1,050-\$1,249.....	617	291	47.2
\$1,250-\$1,449.....	388	161	41.5
\$1,450-\$1,849.....	339	160	47.2
\$1,850-\$2,249.....	134	73	54.5
\$2,250-\$2,849.....	92	55	59.8
\$2,850 and over.....	189	119	62.9
No earnings.....	164	92	56.1
Not reported.....	184	90	49.0

¹ Not shown where base is less than 100.

TABLE 69.—Infant mortality and stillbirth rates, by color and nationality of mother; births in 1915.

Color and nationality of mother.	Total.	Stillbirths.		Live births.	Infant deaths.	
		Number.	Per 1,000 births.		Number.	Infant mortality rate. ¹
Total.....	11,195	398	35.6	10,797	1,117	103.5
White mothers.....	9,774	282	28.9	9,492	910	95.9
Native.....	6,937	198	28.5	6,739	646	95.9
Foreign born.....	2,837	84	29.6	2,753	264	95.9
Jewish.....	991	30	30.3	961	49	51.0
Polish.....	643	18	28.0	625	102	163.2
Italian.....	426	14	32.9	412	36	87.4
German.....	327	9	27.5	318	30	94.3
Irish, English, Scotch, and English-Canadian ²	135	3	22.2	132	15	113.6
Bohemian.....	110	3	27.3	107	10	93.5
Lithuanian.....	104	4	38.5	100	12	120.0
All other ³	101	3	29.7	98	10	102.0
Colored mothers.....	1,421	116	81.6	1,305	207	158.6

¹ Not shown where base is less than 100.

² Includes 101 Irish, 19 English, 10 English-Canadian, and 3 Scotch.

³ Includes 24 Russian, 19 Greek, 13 Magyar, 8 Norwegian, 6 Serbian, 5 French, 5 Slovak, 4 Rumanian, 4 Ruthenian, 3 French-Canadian, 3 Dutch, 2 Slavie (n. o. s.), 2 Spanish, 2 Swedish, 1 Arabian, and 1 Danish.

TABLE 70.—*Infant mortality and stillbirth rates, by color and nationality of mother; births, all pregnancies.¹*

Color and nationality of mother.	Births, all pregnancies.					
	Total.	Stillbirths.		Live births.	Infant deaths.	
		Number.	Per cent.		Number.	Infant mortality rate.
Total.....	36,047	1,203	3.3	34,844	4,158	119.3
White mothers.....	31,312	872	2.8	30,440	3,407	111.9
Native.....	20,258	562	2.8	19,696	2,185	110.9
Foreign born.....	11,054	310	2.8	10,744	1,222	113.7
Jewish.....	3,656	95	2.6	3,561	232	65.2
Polish.....	2,749	68	2.5	2,681	439	163.7
Italian.....	1,758	57	3.2	1,701	189	111.1
German.....	1,355	42	3.1	1,313	165	125.7
All other.....	1,536	48	3.1	1,488	197	132.4
Colored mothers.....	4,735	331	7.0	4,404	751	170.5

¹ To mothers of scheduled legitimate issues in 1915 who reported no previous illegitimate births.

TABLE 71.—*Infant mortality rates,¹ by cause of death, and by color and nationality of mother; live births in 1915.*

Cause of death.	Mortality rates among infants born to mothers of specified color and nationality.							
	Native white.	Foreign-born white.						Colored.
		Total.	Italian.	Jewish.	German.	Polish.	All other.	
All causes.....	95.9	95.9	87.4	51.0	94.3	163.2	107.6	158.6
Gastric and intestinal diseases.....	38.8	29.1	9.7	9.4	22.0	68.8	38.9	30.7
Respiratory diseases.....	13.7	20.7	26.7	9.4	25.2	32.0	20.6	49.0
Malformations.....	4.0	3.3	9.7	1.0	.....	3.2	4.6	2.3
Early infancy.....	38.1	30.9	34.0	22.9	31.4	43.2	27.5	49.8
Epidemic and other communicable diseases.....	4.7	6.5	4.9	6.2	12.6	1.6	11.4	16.9
Tuberculosis.....	1.4	.4	.....	.....	.....	0.4	.....	3.1
Syphilis.....	.3	.7	.....	.....	.....	.....	.7	7.7
External causes.....	.9	.4	2.4	.....	.....	.....	.....	2.3
Diseases ill-defined or unknown.....	.4	1.1	.....	.....	.....	4.8	.....	.8
All other causes.....	5.2	4.0	.....	2.1	3.1	9.6	4.6	6.8

¹ For figures upon which these rates are based, see Tables 49 and 69, pp. 259 and 280.

TABLE 72.—*Excess mortality among infants of Polish mothers over that among infants of other foreign-born white mothers when the effect of greater proportion of employed among Polish mothers is eliminated; infants of Polish mothers not employed away from home during infant's lifetime.*

Month of life.	Infants of Polish mothers not gainfully employed away from home during specified month of infant's life. ¹		
	Survivors at beginning of specified month.	Actual deaths.	Expected deaths. ²
Total.....		26	28.1
First.....	614	25	22.9
Second.....	570	3	2.4
Third.....	561	9	2.9
Fourth.....	530	2	2.1
Fifth.....	521	5	2.6
Sixth.....	505	7	4.5
Seventh.....	486	2	1.9
Eighth.....	471	6	3.3
Ninth.....	449	2	1.3
Tenth to twelfth.....	410	15	5.7

¹ The figures include in each month all infants whose mothers were not employed away from home during that month.

² Expected on the basis of monthly death rates among all infants of foreign-born white mothers. These expected deaths are slightly greater than would have been expected on the basis of monthly death rates among infants of foreign-born white mothers not employed away from home.

TABLE 73.—*Stillbirth rates, by earnings of father and color and nativity of mother; births in 1915.*

Earnings of father.	Total.		Births to mothers of specified color and nativity.									
			Native white.			Foreign-born white.			Colored.			
	Births.	Stillbirths.		Births.	Stillbirths.		Births.	Stillbirths.		Births.	Stillbirths.	
		Number.	Per 1,000 births.		Number.	Per 1,000 births. ¹		Number.	Per 1,000 births. ¹		Number.	Per 1,000 births. ¹
Total.....	11,195	398	35.6	6,937	198	28.5	2,837	84	29.6	1,421	116	81.6
Under \$450.....	1,615	71	44.0	460	11	23.9	599	11	18.4	556	49	88.1
\$450-\$549.....	1,523	74	48.6	663	19	28.7	464	15	32.3	396	40	101.0
\$550-\$649.....	1,543	54	35.0	936	28	29.9	443	14	31.6	164	12	73.2
\$650-\$849.....	2,490	73	29.3	1,776	50	28.2	589	19	32.3	125	4	32.0
\$850-\$1,249.....	2,318	62	26.7	1,849	47	25.4	421	12	28.5	48	3	.....
\$1,250-\$1,849.....	810	20	24.7	645	16	24.8	154	4	26.0	11	.....	.....
\$1,850 and over.....	448	17	37.9	382	16	41.9	63	1	.....	3	.....	.....
\$1,250-\$1,449.....	430	11	25.6	322	8	24.9	103	3	29.1	5	.....	.....
\$1,450-\$1,849.....	380	9	23.7	323	8	24.8	51	1	.....	6	.....	.....
\$1,850-\$2,249.....	143	4	28.0	112	4	35.7	30	.....	.....	1	.....	.....
\$2,250-\$2,849.....	100	5	50.0	86	5	.....	13	.....	.....	1	.....	.....
\$2,850 and over.....	206	8	39.0	184	7	38.0	20	1	.....	1	.....	.....
No earnings.....	222	15	67.6	95	7	.....	53	3	.....	74	5	.....
Not reported.....	226	12	53.1	131	4	30.5	51	5	.....	44	3	.....

¹ Not shown where base is less than 100.

TABLE 74.—*Infant mortality rates, by earnings of father and color and nativity of mother; live births in 1915.*

Earnings of father.	Live births to mothers of specified color and nativity.											
	Total.			Native white.			Foreign-born white.			Colored.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹
Total.....	10,797	1,117	103.5	6,739	646	95.9	2,753	264	95.9	1,305	207	158.6
Under \$450.....	1,544	242	156.7	449	74	164.8	588	85	144.6	507	83	163.7
\$450-\$549.....	1,449	171	118.0	644	83	128.9	449	28	62.4	356	60	168.5
\$550-\$649.....	1,489	162	108.8	908	98	107.9	429	43	100.2	152	21	138.2
\$650-\$849.....	2,417	232	95.0	1,726	165	95.6	570	53	93.0	121	14	115.7
\$850-\$1,249.....	2,256	158	70.0	1,802	126	69.9	409	25	61.1	45	7	.....
\$850-\$1,049.....	1,595	114	71.5	1,251	86	68.7	309	22	71.2	35	6	.....
\$1,050-\$1,249.....	661	44	66.6	551	40	72.6	100	3	30.0	10	1	.....
\$1,250-\$1,849.....	790	63	79.7	629	53	84.3	150	7	46.7	11	3	.....
\$1,250-\$1,449.....	419	31	74.0	314	24	76.4	100	4	40.0	5	3	.....
\$1,450-\$1,849.....	371	32	86.3	315	29	92.1	50	3	.....	6	.....	.....
\$1,850 and over.....	431	16	37.1	366	14	38.3	62	2	.....	3	.....	.....
\$1,850-\$2,249.....	139	5	36.0	108	5	46.3	30	.....	.....	1	.....	.....
\$2,250-\$2,849.....	95	3	.....	81	3	.....	13	.....	.....	1	.....	.....
\$2,850 and over.....	197	8	40.6	177	6	33.9	19	2	.....	1	.....	.....
No earnings.....	207	43	207.7	88	16	.....	50	13	.....	69	14	.....
Not reported.....	214	30	140.2	127	17	133.9	46	8	.....	41	5	.....

¹ Not shown where base is less than 100.

TABLE 75.—*Infant mortality rates, by earnings of father and color and nativity of mother; live births, all pregnancies.*

Earnings of father.	Live births, all pregnancies.											
	Total.			Color and nativity of mother.								
	Live births.	Infant deaths.		Native white.			Foreign-born white.			Colored.		
		Number.	Infant mortality rate.	Live births.	Number.	Infant mortality rate.	Live births.	Number.	Infant mortality rate. ¹	Live births.	Number.	Infant mortality rate. ¹
Total.....	34,844	4,158	119.3	19,696	2,185	110.9	10,744	1,222	113.7	4,404	751	170.5
Under \$450.....	5,751	915	159.1	1,512	218	144.2	2,500	366	146.4	1,739	331	190.3
\$450-\$549.....	4,837	634	131.1	1,980	268	135.4	1,724	183	106.1	1,133	183	161.5
\$550-\$649.....	4,975	627	126.0	2,788	355	127.3	1,655	181	109.4	532	91	171.1
\$650-\$849.....	7,521	877	116.6	4,963	581	117.1	2,100	231	110.0	458	65	141.9
\$850-\$1,249.....	6,874	648	94.3	5,159	467	90.5	1,550	160	103.2	165	21	127.3
\$850-\$1,049.....	4,780	443	92.7	3,469	300	86.5	1,180	127	107.6	131	16	122.1
\$1,050-\$1,249.....	2,094	205	97.9	1,690	167	98.8	370	33	89.2	34	5	.....
\$1,250-\$1,849.....	2,371	200	84.4	1,756	151	86.0	581	42	72.3	34	7	.....
\$1,250-\$1,449.....	1,201	105	81.3	879	74	84.2	392	24	61.2	20	7	.....
\$1,450-\$1,849.....	1,080	95	88.0	877	77	87.8	189	18	95.2	14	.....	.....
\$1,850 and over.....	1,134	61	53.8	892	54	60.5	239	7	29.3	3	.....	.....
\$1,850-\$2,249.....	366	18	49.2	249	18	72.3	116	.....	.....	1	.....	.....
\$2,250-\$2,849.....	240	10	41.7	199	10	50.3	40	.....	.....	1	.....	.....
\$2,850 and over.....	328	33	62.5	444	26	58.6	83	7	.....	1	.....	.....
No earnings.....	683	107	156.7	259	47	181.5	215	25	116.3	209	35	167.5
Not reported.....	698	89	127.5	387	44	113.7	180	27	150.0	131	18	137.4

¹ Not shown where base is less than 100.

TABLE 76.—Stillbirth rates, by earnings of father and color and nativity of mother; both, all pregnancies.

Earnings of father.	Total.			Births to mothers of specified color and nativity: all pregnancies.								
				Native white.			Foreign-born white.			Colored.		
	Births.	Stillbirths.		Births.	Stillbirths.		Births.	Stillbirths.		Births.	Stillbirths.	
		Num-ber.	Per 1,000 births.		Num-ber.	Per 1,000 births.		Num-ber.	Per 1,000 births.		Num-ber.	Per 1,000 births.
Total.....	26,047	1,208	33.4	20,268	862	27.7	11,054	310	28.0	4,735	331	69.9
Under \$450.....	6,002	251	41.8	1,562	69	25.8	2,561	61	23.8	1,889	159	79.4
\$450-\$649.....	5,050	213	42.2	2,689	59	28.9	1,736	62	34.7	1,225	92	75.1
\$650-\$849.....	5,123	148	28.9	2,858	70	24.5	1,791	46	27.0	564	32	56.7
\$850-\$949.....	7,725	214	27.7	5,094	131	25.7	2,190	60	27.5	451	28	61.5
\$950-\$1,249.....	7,078	204	28.8	5,308	149	28.1	1,393	43	27.0	177	12	67.5
\$1,250-\$1,449.....	4,915	125	27.5	3,561	92	25.8	1,213	33	27.2	141	10	70.9
\$1,450-\$1,749.....	2,163	69	31.9	1,747	57	32.6	330	10	28.3	36	2	.....
\$1,750-\$1,949.....	2,429	68	27.9	1,812	57	31.4	392	11	18.6	34	.....	.....
\$1,950-\$1,449.....	1,328	25	28.4	904	25	27.7	402	10	24.9	20	.....	.....
\$1,450-\$1,949.....	1,113	33	29.6	909	22	35.2	190	1	5.3	14	.....	.....
\$1,950 and over.....	1,172	28	32.4	922	30	32.5	247	8	32.4	3	.....	.....
\$1,950-\$2,249.....	375	9	24.0	257	8	31.1	117	1	8.5	1	.....	.....
\$2,250-\$2,949.....	251	11	43.8	205	7	34.0	44	4	.....	1	.....	.....
\$2,950 and over.....	546	18	32.0	459	15	32.7	86	3	.....	1	.....	.....
No earnings.....	723	40	55.3	274	15	54.7	225	10	44.4	234	15	67.0
Not reported.....	725	27	37.2	398	11	27.6	189	9	47.6	138	7	59.7

¹ Not shown where base is less than 100.

Neonatal infant mortality rates, earnings of father, and color and nationality of mother; live births in 1915.

Race and color and nationality of mother.	Live births.	Infant deaths at specified age.			
		Under 1 month.		1 month and over.	
		Number.	Per 1,000 live births. ¹	Number.	Per 1,000 live births. ¹
Total	10,797	477	44.2	640	59.3
White:	1,544	93	60.2	149	96.5
.....	1,449	67	46.2	104	71.8
.....	1,489	66	44.3	96	64.5
.....	2,417	106	43.9	126	52.1
.....	2,266	76	33.7	82	36.3
.....	790	42	53.2	21	26.6
.....	431	12	27.8	4	9.3
.....	207	8	38.6	35	169.1
.....	214	7	32.7	23	107.5
Non-white mothers:	6,739	286	42.4	390	58.4
.....	449	29	64.6	45	100.2
.....	644	32	49.7	51	79.2
.....	908	40	44.1	58	63.9
.....	1,726	75	43.5	90	52.1
.....	1,802	59	32.7	67	37.2
.....	629	35	55.6	13	20.6
.....	366	11	30.1	3	8.2
.....	88	2	.....	14	.....
.....	127	3	23.6	14	110.2
.....	2,753	108	39.2	156	56.7
.....	1,406	56	39.2	100	69.2
.....	588	30	51.0	55	93.5
.....	449	10	22.3	18	40.1
.....	429	16	37.3	27	62.9
.....	1,191	45	37.8	42	35.3
.....	570	24	42.1	29	50.9
.....	409	13	31.8	12	29.3
.....	212	8	37.7	1	4.7
.....	50	4	.....	9	.....
.....	46	3	.....	5	.....
.....	961	26	27.1	23	23.9
.....	446	10	22.4	12	26.9
.....	469	14	29.9	5	10.7
.....	27	1	.....	3	.....
.....	19	1	.....	3	.....
.....	625	35	56.0	67	107.2
.....	443	22	49.7	49	110.6
.....	163	12	73.6	13	79.8
.....	10	1	.....	3	.....
.....	9	.....	.....	2	.....
.....	412	17	41.3	19	46.1
.....	256	12	46.9	15	58.6
.....	144	4	27.8	3	20.8
.....	4	.....	.....	1	.....
.....	8	1	.....	.....	.....
.....	755	30	39.7	47	62.3
.....	321	12	37.4	24	74.8
.....	415	15	36.1	21	50.6
.....	9	2	.....	2	.....
.....	10	1	.....	.....	.....
.....	1,306	83	63.6	124	95.0
.....	507	34	67.1	49	96.6
.....	356	25	70.2	35	98.3
.....	152	10	65.8	11	72.4
.....	180	11	61.1	13	72.2
.....	69	2	.....	12	.....
.....	41	1	.....	4	.....

¹where base is less than 100.

TABLE 78.—*Infant mortality rates, by cause of death, earnings of father, and color and nationality of mother; live births in 1915.*

Earnings of father and color and nationality of mother.	Live births.	Infant deaths from specified causes.									
		Total infant deaths.		Gastric and intestinal diseases.		Respiratory and other communicable diseases.		Early infancy.		Other causes.	
		Number.	Infant mortality rate. ¹	Number.	Infant mortality rate. ¹	Number.	Infant mortality rate. ¹	Number.	Infant mortality rate. ¹	Number.	Infant mortality rate. ¹
All mothers.....	10,797	1,117	103.5	314	29.1	285	26.4	407	37.7	111	10.3
Earnings of father:											
Under \$450.....	1,544	242	156.7	73	47.3	74	47.9	76	49.2	19	12.3
\$450-\$549.....	1,449	171	118.0	59	40.7	42	29.0	53	36.6	17	11.7
\$550-\$649.....	1,489	162	108.8	46	30.9	41	27.5	63	42.3	12	8.1
\$650-\$849.....	2,417	232	96.0	55	22.8	63	26.1	91	37.6	23	9.5
\$850-\$1,249.....	2,256	158	70.0	41	18.2	33	14.6	64	28.4	20	8.9
\$1,250-\$1,849.....	790	63	79.7	8	10.1	8	10.1	36	45.6	11	13.9
\$1,850 and over.....	431	16	37.1	2	4.6	2	4.6	9	20.9	3	7.0
No earnings.....	207	43	207.7	20	96.6	13	62.8	7	33.8	3	14.5
Not reported.....	214	30	140.2	10	46.7	9	42.1	8	37.4	3	14.0
Native white mothers.....	6,739	646	95.9	194	28.8	124	18.4	257	38.1	71	10.5
Earnings of father:											
Under \$450.....	449	74	164.8	23	51.2	17	37.9	28	62.4	6	13.4
\$450-\$549.....	644	83	128.9	34	52.8	14	21.7	28	43.5	7	10.9
\$550-\$649.....	908	98	107.9	34	37.4	17	18.7	41	45.2	6	6.6
\$650-\$849.....	1,726	165	95.6	44	25.5	38	22.0	67	38.8	16	9.3
\$850-\$1,249.....	1,802	126	69.9	31	17.2	24	13.3	51	28.3	20	11.1
\$1,250-\$1,849.....	629	53	84.3	8	12.7	7	11.1	28	44.5	10	15.9
\$1,850 and over.....	366	14	38.3	2	5.5	1	2.7	8	21.9	3	8.2
No earnings.....	88	16	181.8	10	11.4	2	2.3	3	3.4	1	1.1
Not reported.....	127	17	133.9	8	63.0	4	31.5	3	23.6	2	15.7
Foreign-born white mothers.....	2,753	264	95.9	80	29.1	75	27.2	85	30.9	24	8.7
Earnings of father:											
Under \$650.....	1,466	156	106.4	53	36.2	45	30.7	42	28.6	16	10.9
Under \$450.....	558	85	144.6	33	59.1	21	35.7	24	40.8	7	11.9
\$450-\$549.....	449	28	62.4	12	26.7	7	15.6	4	8.9	5	11.1
\$550-\$649.....	429	43	100.2	8	18.6	17	39.6	14	32.6	4	9.3
\$650 and over.....	1,191	37	31.0	20	16.8	24	20.2	36	30.2	7	5.9
\$650-\$849.....	570	53	93.0	10	17.5	18	31.6	19	33.3	6	10.5
\$850-\$1,249.....	409	25	61.1	10	24.4	5	12.2	10	24.4	4	10.5
\$1,250 and over.....	212	9	42.5	1	4.7	1	4.7	7	33.0	1	4.7
No earnings.....	50	13	260.0	5	10.0	4	8.0	3	6.0	1	1.0
Not reported.....	46	8	171.7	2	4.3	2	4.3	4	8.7	1	2.3
Jewish.....	961	49	51.0	9	9.4	15	15.6	22	22.9	3	3.1
Earnings of father:											
Under \$650.....	446	22	49.3	5	11.2	8	17.9	7	15.7	2	4.5
\$650 and over.....	469	19	40.5	2	4.3	4	8.5	12	25.6	1	2.1
No earnings.....	27	4	148.1	2	7.4	1	3.7	1	3.7	1	3.7
Not reported.....	19	4	210.5	2	10.5	2	10.5	2	10.5	2	10.5
Polish.....	625	102	163.2	43	68.8	21	33.6	27	43.2	11	17.6
Earnings of father:											
Under \$650.....	443	71	160.3	31	70.0	13	29.3	20	45.1	7	15.8
\$650 and over.....	163	25	153.4	8	49.0	7	42.9	6	38.6	4	24.5
No earnings.....	10	4	40.0	2	20.0	1	10.0	1	10.0	1	10.0
Not reported.....	9	2	22.2	2	22.2	1	11.1	1	11.1	1	11.1
Italian.....	412	36	87.4	4	9.7	13	31.6	14	34.0	5	12.1
Earnings of father:											
Under \$650.....	256	27	105.5	4	15.6	10	39.1	9	35.2	4	15.6
\$650 and over.....	144	7	48.6	1	7.0	3	20.8	4	27.8	1	7.0
No earnings.....	4	1	25.0	1	25.0	1	25.0	1	25.0	1	25.0
Not reported.....	8	1	12.5	1	12.5	1	12.5	1	12.5	1	12.5
All other.....	755	77	102.0	24	31.8	26	34.4	22	29.1	5	6.6
Earnings of father:											
Under \$650.....	321	36	112.1	13	40.5	14	43.6	6	18.7	3	9.3
\$650 and over.....	415	36	86.7	10	24.1	10	24.1	14	33.7	2	4.8
No earnings.....	9	4	44.4	1	11.1	2	22.2	1	11.1	1	11.1
Not reported.....	10	1	10.0	1	10.0	1	10.0	1	10.0	1	10.0
Colored mothers.....	1,306	207	158.6	40	30.7	86	65.9	65	49.8	16	12.3
Earnings of father:											
Under \$450.....	507	83	163.7	17	33.5	36	71.0	24	47.3	6	11.8
\$450-\$549.....	356	60	168.5	13	36.5	21	59.0	21	59.0	5	14.0
\$550-\$649.....	152	21	138.2	4	26.3	7	46.1	8	52.6	2	13.2
\$650 and over.....	180	24	133.3	1	5.6	12	66.7	10	55.6	1	8.6
No earnings.....	69	14	203.0	5	7.3	7	10.1	1	1.4	1	1.4
Not reported.....	41	5	122.0	1	2.4	3	7.3	1	2.4	1	2.4

¹ Not shown where base is less than 100.

TABLE 79.—Deaths before feeding per 1,000 live births, and infant death rates per 1,000 fed, by earnings of father and color and nativity of mother; live births in 1915.

Earnings of father and color and nativity of mother.	Live births.	Infants died at once, not fed.		Infants fed.		
		Number.	Per 1,000 live births. ¹	Number.	Subsequent deaths.	
					Number.	Per 1,000 fed. ¹
All mothers.....	10,797	269	24.9	10,528	848	80.5
Earnings of father:						
Under \$450.....	1,544	49	31.7	1,495	193	129.1
\$450-\$549.....	1,449	37	25.5	1,412	134	94.9
\$550-\$649.....	1,499	37	24.8	1,452	125	86.1
\$650-\$949.....	2,417	55	22.8	2,362	177	74.9
\$950-\$1,249.....	2,256	51	22.6	2,205	107	48.5
\$1,250-\$1,849.....	790	23	29.1	767	40	52.2
\$1,850 and over.....	431	7	16.2	424	9	21.2
No earnings.....	207	6	29.0	201	37	184.1
Not reported.....	214	4	18.7	210	26	123.8
Native white mothers.....	6,739	172	25.5	6,567	474	72.2
Earnings of father:						
Under \$450.....	449	12	26.7	437	62	141.9
\$450-\$549.....	644	23	35.7	621	60	96.6
\$550-\$649.....	908	24	26.4	884	74	83.7
\$650-\$949.....	1,726	42	24.3	1,684	123	73.0
\$950-\$1,249.....	1,802	41	22.8	1,761	85	48.3
\$1,250-\$1,849.....	629	20	31.8	609	33	54.2
\$1,850 and over.....	366	6	16.4	360	8	22.2
No earnings.....	88	2	.....	86	14	.....
Not reported.....	127	2	15.7	125	15	120.0
Foreign-born white mothers.....	2,753	62	22.5	2,691	202	75.1
Earnings of father:						
Under \$450.....	588	19	32.3	569	66	116.0
\$450-\$549.....	449	5	11.1	444	23	51.8
\$550-\$649.....	429	11	25.6	418	32	76.6
\$650-\$949.....	570	11	19.3	559	42	75.1
\$950-\$1,249.....	409	8	19.6	401	17	42.4
\$1,250 and over.....	212	4	18.9	208	5	24.0
No earnings.....	50	3	.....	47	10	.....
Not reported.....	46	1	.....	45	7	.....
Colored mothers.....	1,305	35	26.8	1,270	172	135.4
Earnings of father:						
Under \$450.....	507	18	35.5	489	65	132.9
\$450-\$549.....	356	9	25.3	347	51	147.0
\$550-\$649.....	152	2	13.2	150	19	126.7
\$650 and over.....	190	4	22.2	176	20	113.6
No earnings.....	69	1	.....	68	13	.....
Not reported.....	41	1	.....	40	4	.....

¹ Not shown where base is less than 100.

TABLE 80.—Type of feeding, by month of life and earnings of father and color and nativity of mother; infants born in 1915.

Earnings of father and color and nativity of mother.	Per cent of survivors. ¹											
	Breast fed.				Mixed fed.				Artificially fed.			
	1st mo.	3d mo.	6th mo.	9th mo.	1st mo.	3d mo.	6th mo.	9th mo.	1st mo.	3d mo.	6th mo.	9th mo.
All mothers.....	88.2	72.2	53.2	28.6	2.7	8.2	19.7	39.4	9.1	19.6	27.1	32.0
Earnings of father:												
Under \$450.....	89.3	72.6	50.8	24.8	3.4	12.1	25.6	46.8	7.4	15.4	23.6	28.5
\$450-\$549.....	90.6	74.9	54.1	27.0	2.7	10.0	24.6	48.3	6.7	15.1	21.3	24.7
\$550-\$649.....	89.2	74.2	56.1	31.5	2.3	6.5	18.4	39.9	8.5	19.3	25.5	28.6
\$650-\$849.....	88.0	73.2	54.9	30.5	2.6	7.2	18.3	38.6	9.5	19.6	26.8	30.9
\$850-\$1,049.....	87.8	73.9	55.1	30.5	2.5	5.9	16.3	35.9	9.7	20.2	28.7	33.6
\$1,050-\$1,249.....	86.6	69.8	48.6	25.8	2.1	4.6	15.5	32.3	11.3	25.6	35.9	41.9
\$1,250-\$1,449.....	84.1	70.5	56.5	31.6	3.2	7.5	14.9	33.4	12.7	22.0	28.6	34.9
\$1,450-\$1,849.....	86.0	68.7	53.6	29.0	3.9	7.2	14.2	30.5	10.1	24.1	32.2	40.5
\$1,850-\$2,249.....	90.5	67.9	51.9	31.3	1.5	8.8	15.6	27.6	8.0	23.4	32.6	41.0
\$2,250-\$2,849.....	87.1	65.2	41.3	21.7	1.1	7.6	18.5	29.3	11.8	27.2	40.2	48.9
\$2,850 and over.....	88.7	63.7	46.3	24.7	4.6	10.0	17.4	25.3	6.7	26.3	36.3	50.0
No earnings.....	84.0	56.1	40.2	21.9	.....	17.2	28.3	43.8	15.5	26.8	31.5	34.3
Not reported.....	83.8	59.4	43.6	22.5	3.3	14.9	25.6	36.6	12.9	25.7	30.8	40.8
Native white mothers.	86.6	70.1	52.2	30.1	2.4	6.3	16.0	33.7	11.2	23.6	31.8	36.1
Earnings of father:												
Under \$850.....	87.1	71.0	52.5	30.5	2.2	6.6	17.7	36.9	10.7	22.4	29.8	32.6
Under \$450.....	87.8	74.0	52.5	26.6	2.1	8.0	19.3	41.8	10.1	18.1	28.1	31.6
\$450-\$549.....	87.9	69.4	50.3	28.2	1.9	8.7	21.6	41.7	10.1	21.9	28.2	30.1
\$550-\$649.....	87.7	72.2	53.1	33.9	2.3	4.4	17.2	35.1	10.1	23.3	29.7	31.1
\$650-\$849.....	86.3	70.3	53.1	30.6	2.4	6.6	16.1	34.9	11.3	23.1	30.8	34.4
\$850 and over.....	86.4	69.7	52.2	29.8	2.6	5.5	13.7	29.9	11.0	24.8	34.1	40.3
\$850-\$1,049.....	87.0	72.5	54.1	31.1	2.4	4.9	14.4	33.6	10.5	22.6	31.5	35.3
\$1,050-\$1,249.....	85.4	67.6	47.6	25.0	2.1	4.6	14.1	30.0	12.5	27.8	38.3	45.0
\$1,250-\$1,449.....	84.0	70.6	57.2	34.0	2.9	5.4	10.4	27.2	13.1	24.1	32.3	38.8
\$1,450-\$1,849.....	84.8	66.1	52.1	30.6	3.6	6.5	11.6	24.7	11.6	27.4	36.3	44.8
\$1,850 and over.....	88.9	65.4	48.4	28.7	3.1	8.5	15.3	23.6	8.1	26.2	36.3	47.7
No earnings.....	76.7	58.8	47.4	32.4	.....	8.2	16.7	28.4	22.1	32.9	35.9	39.2
Not reported.....	81.6	58.5	44.1	24.1	2.4	12.2	20.3	31.1	16.0	29.3	35.6	44.8
Foreign-born white mothers.	91.3	78.9	58.7	28.3	3.3	9.6	23.6	48.8	5.4	11.5	17.6	23.0
Earnings of father:												
Under \$850.....	91.9	79.8	60.0	29.2	3.5	9.6	23.5	49.7	4.6	10.6	16.4	21.1
Under \$450.....	89.1	75.0	54.6	27.9	4.8	11.8	26.4	48.7	6.2	12.5	19.0	23.3
\$450-\$549.....	94.4	83.7	62.0	28.2	3.2	8.9	25.5	54.9	2.5	7.3	12.5	16.9
\$550-\$649.....	93.3	81.2	64.9	29.7	2.4	8.5	18.6	48.7	4.3	10.2	16.6	21.6
\$650-\$849.....	91.8	79.8	60.2	30.7	3.4	8.6	22.9	47.2	4.8	11.6	16.9	22.0
\$850 and over.....	90.5	77.9	55.7	26.2	3.8	9.4	24.4	46.4	6.7	12.7	19.8	27.4
\$850-\$1,049.....	90.4	80.1	59.2	29.0	2.6	8.5	22.3	43.1	7.0	11.5	18.5	27.9
\$1,050-\$1,249.....	92.9	80.6	54.1	29.9	2.0	5.1	22.4	43.3	5.1	14.3	23.5	27.0
\$1,250 and over.....	89.4	73.5	51.5	20.6	3.4	12.7	28.4	52.5	7.2	13.7	20.1	26.8
No earnings.....	85.1	60.9	45.5	15.8	.....	15.2	20.5	50.0	14.9	23.9	34.1	34.2
Not reported.....	84.4	70.7	55.0	28.2	4.4	4.9	20.0	38.5	11.1	24.4	25.0	33.3
Colored mothers.....	90.2	68.9	46.8	21.1	2.8	15.7	30.4	49.8	7.0	15.4	22.8	29.1
Earnings of father:												
Under \$450.....	90.8	67.7	44.7	19.5	2.9	16.1	30.1	48.7	6.3	16.3	25.2	31.8
\$450-\$549.....	90.5	73.6	50.6	23.0	3.5	13.7	29.0	51.5	6.1	12.8	20.4	25.6
\$550-\$649.....	86.7	65.7	48.5	22.6	2.0	13.6	25.0	43.6	11.3	20.7	26.5	33.8
\$650 and over.....	90.9	77.8	54.9	26.3	2.3	10.8	27.8	50.6	6.8	11.4	17.3	23.1
No earnings.....	91.2	49.3	27.4	12.3	1.5	20.9	48.4	59.6	7.4	20.9	24.2	28.1
Not reported.....	90.0	50.0	29.7	11.1	5.0	34.2	48.6	52.8	5.0	15.8	21.6	36.1

¹ Percentages are based upon total number of survivors at the beginning of the month whose type of feeding was reported.

TABLE 81.—Type of feeding, by month of life and by nationality; infants born in 1915 to foreign-born white mothers.

Nationality of mother.	Per cent of survivors. ¹											
	Breast fed.				Mixed fed.				Artificially fed.			
	1st mo.	3d mo.	6th mo.	9th mo.	1st mo.	3d mo.	6th mo.	9th mo.	1st mo.	3d mo.	6th mo.	9th mo.
Foreign-born white mothers:												
Jewish.....	93.0	80.1	55.7	22.4	4.1	12.4	31.4	59.0	2.9	7.5	12.9	18.6
Polish.....	92.4	81.7	65.0	34.1	2.8	8.0	19.5	47.7	4.8	10.3	15.5	18.2
Italian.....	92.8	83.2	66.3	32.8	4.5	9.7	19.9	45.1	2.7	7.1	13.7	22.0
All other.....	87.6	72.7	53.5	28.9	2.0	7.1	18.8	38.1	10.4	20.2	27.7	33.0

¹ Percentages are based upon total number of survivors at the beginning of the month whose type of feeding was reported.

TABLE 82.—Relative mortality among infants in families where the father earned \$450 to \$549 in comparison with that among infants in families where the father earned \$550 to \$849, when effect of differences in type of feeding is eliminated; infants born in 1915 to foreign-born white mothers.

Month of life.	Infants born in 1915 to foreign-born white mothers in families where fathers earned \$450 to \$549. ¹											
	Total.		Breast fed.		Mixed fed.		Artificially fed.		Deaths in month.			
	Survivors. ¹	Deaths in month.		Survivors.	Deaths in month.		Survivors.	Deaths in month.		Survivors.	Deaths in month.	
		Actual.	Expected. ²		Actual.	Expected. ²		Actual.	Expected. ²		Actual.	Expected. ²
Total.....		23	29.8		12	15.0		3	6.0		8	8.8
First.....	444	5	8.0	419	5	6.5	14	1.0	11	.....	.5
Second.....	439	3	2.2	390	2	1.9	26	.....	23	1	.3
Third.....	436	4	1.7	365	3	1.4	39	.....	32	1	.3
Fourth.....	432	.....	2.5	317	.....	.9	68	.....	47	.....	1.0
Fifth.....	432	.....	3.0	299	.....	1.4	84	.....	49	.....	1.0
Sixth.....	432	4	1.8	268	.....	.5	110	1	54	3	.7
Seventh.....	428	.....	1.5	204	.....	.....	168	.....	56	.....	1.0
Eighth.....	428	2	3.2	161	.....	1.3	199	1	68	1	1.4
Ninth.....	426	.....	2.0	120	.....	.4	234	.....	72	.....	1.1
Tenth to twelfth ³	426	5	3.9	96	2	.7	249	1	81	2	1.5	

¹ Excluding 5 live-born infants who died at once, never fed. The total live births in foreign-born white families, father's earnings group, \$450 to \$549, was 449; 5 infants died at once, never fed; if the rate for deaths of infants not fed (22.0 per 1,000 live births) among infants in foreign-born white families, father's earnings group \$550 to \$849, had applied to the group \$450 to \$549, 9.9 deaths would have occurred of infants not fed, instead of the 5 that actually occurred.

² For this comparison the numbers breast fed, mixed fed, and artificially fed during each month of life are multiplied by monthly death rates for breast fed, mixed fed, and artificially fed infants, respectively, for the same month of life in foreign-born white families where the fathers earned \$550 to \$849.

³ Figures for survivors at beginning of tenth, and deaths in tenth, eleventh, and twelfth among them.

TABLE 83.—*Infant mortality rates in favored group, by earnings of father and color and nativity of mother; live births in 1915.*

Earnings of father and color and nativity of mother.	Favored group. ¹			All others.		
	Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²
Native white mothers...	4,035	301	74.6	2,704	345	127.6
Earnings of father:						
Under \$450.....	185	21	113.5	264	53	200.8
\$450-\$549.....	301	36	119.6	343	47	137.0
\$550-\$849.....	492	43	87.4	416	55	132.2
\$850-\$949.....	1,063	77	72.4	663	88	132.7
\$850-\$1,249.....	1,175	64	54.5	627	62	96.9
\$1,250-\$1,949.....	453	38	83.9	176	15	86.2
\$1,850 and over.....	281	13	46.3	85	1	.....
No earnings.....	26	2	.....	62	14	.....
Not reported.....	59	7	.....	68	10	.....
Foreign-born white mothers.....	832	49	58.9	1,921	215	111.9
Earnings of father:						
Under \$450.....	112	11	98.2	476	74	155.5
\$450-\$549.....	102	5	49.0	347	23	66.3
\$550-\$849.....	127	9	70.9	302	34	112.6
\$850-\$949.....	214	16	74.8	356	37	103.9
\$850-\$1,249.....	159	5	31.4	250	20	80.0
\$1,250 and over.....	102	3	20.4	110	6	54.5
No earnings.....	4	.....	.....	46	13	.....
Not reported.....	12	.....	.....	34	8	.....
Colored mothers.....	201	18	89.6	1,104	189	171.2
Earnings of father:						
Under \$450.....	49	3	.....	458	80	174.6
\$450-\$549.....	66	7	.....	290	53	182.8
\$550-\$849.....	34	2	.....	118	19	161.0
\$850-\$849.....	27	4	.....	94	10	.....
\$850 and over.....	15	1	.....	44	9	.....
No earnings.....	4	.....	.....	65	14	.....
Not reported.....	6	1	.....	35	4	.....

¹ The "favored group" includes only infants from the second to the sixth in order of birth, born after an interval of at least 2 years since preceding issue to literate mothers not employed during pregnancy or the year after the birth.

² Not shown where base is less than 100.

TABLE 84.—*Death rates in favored group per 100 (infants who lived at least two weeks), by average number of persons per room and earnings of father; infants born in 1915 to white mothers, who lived at least two weeks in dwellings studied.*

Earnings of father.	Infants (of white mothers) who lived at least 2 weeks in dwellings with specified average number of persons per room.														
	Less than 1.						1 but less than 2.						2 or more.		
	Favored group. ¹			Others.			Favored group. ¹			Others.			Deaths.		
	In-fants.	Deaths.	Per ct. ²	In-fants.	Deaths.	Per ct. ²	In-fants.	Deaths.	Per ct. ²	In-fants.	Deaths.	Per ct. ²	In-fants.	Per ct. ²	
Total...	3,247	108	3.3	1,743	114	6.5	1,437	77	5.4	2,218	207	9.3	450	51	11.3
Under \$450...	113	8	7.1	147	19	12.9	175	16	9.1	385	44	11.4	159	19	11.9
\$450-\$549.....	193	10	5.2	194	13	6.7	188	11	5.9	384	32	8.3	93	6	.....
\$550-\$849.....	1,146	46	4.0	631	39	6.2	680	36	5.3	880	87	9.9	147	14	9.5
\$850-\$1,249.....	1,025	27	2.6	458	25	5.5	272	8	2.9	357	24	6.7	27	3	.....
\$1,250 and over.....	704	14	2.0	242	10	4.1	92	3	.....	107	1	.9	8	.....	.....
No earnings.....	12	1	.....	30	6	.....	15	.....	.....	59	10	.....	12	7	.....
Not reported.....	54	2	.....	41	2	.....	15	3	.....	46	9	.....	4	2	.....

¹ "Favored group" includes only infants from the second to the sixth in order of birth, born after an interval of at least 2 years since preceding issue, to literate mothers not employed during pregnancy or the year after the birth.

² Not shown where base is less than 100.

TABLE 85.—*Infant mortality rates, by occupation group¹ and earnings of father and color and nativity of mother; live births in 1915.*

Earnings of father and color and nativity of mother.	Live births in families where fathers were employed in specified occupations group. ¹							
	Groups I and II.			Groups III, IV, and V.			Occupation not reported.	
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.
		Num-ber.	Infant mortal-ity rate. ²		Num-ber.	Infant mortal-ity rate. ²		
Native white mothers.....	2,344	247	106.4	4,304	380	88.3	8	3
Earnings of father:								
Under \$450.....	307	54	175.9	141	19	134.8	1	1
\$450-\$549.....	416	53	127.4	226	30	132.7	2	.....
\$550-\$649.....	536	45	83.6	372	50	134.4	.....	.....
\$650-\$749.....	629	63	91.4	1,086	102	98.5	1	.....
\$750-\$1,249.....	313	21	67.1	1,480	105	70.5	.....	.....
\$1,250 and over.....	48	8	.....	581	50	86.1	.....	.....
No earnings.....	7	.....	.....	250	14	56.0	.....	.....
Not reported.....	28	5	.....	95	10	.....	4	2
Foreign-born white mothers.....	1,086	104	100.1	1,086	88	82.4	4	1
Earnings of father:								
Under \$450.....	476	69	145.0	111	16	144.1	1	.....
\$450-\$549.....	338	25	74.0	110	3	27.3	1	.....
\$550-\$649.....	302	25	82.7	127	15	118.1	.....	.....
\$650-\$749.....	335	26	77.6	235	27	114.9	.....	.....
\$750-\$1,249.....	147	12	81.6	362	13	49.6	.....	.....
\$1,250 and over.....	28	2	.....	187	7	37.4	.....	.....
No earnings.....	.....	.....	.....	7	2	.....	.....	.....
Not reported.....	18	2	.....	29	5	.....	2	1
Colored mothers.....	1,100	165	150.0	133	28	210.5	4	1
Earnings of father:								
Under \$450.....	490	76	155.3	27	7	.....	.....	.....
\$450-\$549.....	324	55	169.8	32	5	.....	.....	.....
\$550-\$649.....	126	18	142.4	16	3	.....	.....	.....
\$650 and over.....	128	14	109.4	52	10	.....	.....	.....
No earnings.....	.....	.....	.....	1	1	.....	.....	.....
Not reported.....	32	2	.....	5	2	.....	4	1

¹ For grouping see p. 26.

² In families where father had no occupation (including those who lived on own income) 83 births to native-white mothers, with 16 deaths; 43 births to foreign-born white mothers, with 11 deaths; and 68 births to colored mothers, with 13 deaths, were reported.

³ Not shown where base is less than 100.

TABLE 86.—*Excess mortality in overcrowded dwellings, with effect of differences in father's earnings eliminated; infants (born in 1915 to native white mothers) who lived at least two weeks in dwellings with one or more persons per room.*

Earnings of father.	Infants (native white mothers) who lived at least 2 weeks in dwellings with 1 or more persons per room.			
	Infants.	Actual deaths.	Expected deaths. ¹	
			Number.	Per 100 infants. ²
All.....	2,344	208	132.6	.....
Under \$450.....	297	41	20.0	7.5
\$450-\$549.....	332	33	23.6	7.1
\$550-\$649.....	432	24	29.8	6.9
\$650-\$749.....	634	51	26.5	4.5
\$750-\$1,249.....	460	26	17.5	3.8
\$1,250 and over.....	124	4	3.3	2.7
No earnings.....	50	9	8.1	.....
Not reported.....	48	10	1.8	4.0

¹ Expected deaths are calculated by applying to the infants in each earning group the rate for infants (of native white mothers) in the same earnings group who lived in dwellings with less than 1 person per room.

² Not shown where base is less than 100. Derived from Table 80.

TABLE 87.—*Excess mortality, by ward of residence and cause of death, over mortality expected when differences due to color and nationality are eliminated; live births in 1915.*

Ward of residence.	Live births.	Infant mortality rates from specified causes.							
		All causes.		Early infancy.		Gastric and intestinal diseases.		Respiratory and other communicable diseases.	
		Actual.	Expected. ¹	Actual.	Expected. ¹	Actual.	Expected. ¹	Actual.	Expected. ¹
Total.....	10,797	103.5	103.5	37.7	37.7	29.1	29.1	26.4	26.4
1.....	790	117.7	110.0	38.0	38.7	34.2	37.0	34.2	22.9
2.....	620	140.3	123.5	40.3	39.0	58.1	45.3	33.9	26.5
3.....	627	106.9	88.0	36.7	31.4	35.1	23.6	25.5	22.9
4.....	215	97.7	106.5	23.3	35.8	27.9	26.5	32.6	32.6
5.....	396	65.7	86.9	20.2	32.6	7.6	16.7	27.8	29.3
6.....	596	85.6	91.8	33.6	35.2	23.5	24.8	18.5	23.3
7.....	649	92.4	100.9	40.1	37.3	20.0	28.7	18.5	26.0
8.....	598	92.0	98.0	43.5	37.8	15.1	28.8	23.4	21.2
9.....	496	78.6	100.4	24.2	36.9	30.2	29.0	16.1	22.6
10.....	331	102.7	96.1	30.2	36.3	24.2	26.3	39.3	23.9
11.....	145	89.7	123.4	20.7	42.1	13.8	28.3	41.4	42.9
12.....	409	92.9	104.6	36.7	39.4	14.7	28.9	26.9	25.9
13.....	449	86.9	95.1	42.3	37.4	20.0	28.1	17.8	19.4
14.....	289	128.0	126.3	58.8	42.9	17.3	28.4	38.1	44.6
15.....	598	80.3	107.2	30.1	39.5	18.4	28.1	25.1	29.3
16.....	417	93.5	107.7	33.6	36.8	33.6	28.5	19.2	28.5
17.....	252	146.8	138.1	75.4	45.2	23.8	27.8	43.7	53.6
18.....	269	107.8	108.9	55.8	38.7	14.9	27.5	33.5	31.6
19.....	381	126.0	103.7	36.7	38.3	42.0	28.6	28.9	26.2
20.....	606	99.0	95.5	46.2	36.8	26.4	27.9	16.5	21.1
21.....	447	136.5	102.0	47.0	38.3	58.2	28.9	20.1	24.4
22.....	261	134.1	110.0	23.0	37.9	49.8	28.0	57.5	33.0
23.....	351	114.0	100.3	42.7	37.9	37.0	27.9	19.9	24.2
24.....	605	99.2	100.3	29.8	36.9	33.1	31.1	23.1	22.9

¹ Expected rates are found by dividing the births in each ward into the deaths calculated by applying the rates for all births in each color and nationality group to the live births of the corresponding groups in the ward.

TABLE 88.—*Excess mortality in overcrowded dwellings, with effect of differences in father's earnings eliminated; infants (born in 1915 to foreign-born white mothers) who lived at least two weeks in dwellings with less than one and with two or more persons per room.*

Earnings of father.	Infants (of foreign-born white mothers) who lived at least 2 weeks in dwellings with specified number of persons per room.					
	Less than 1.		2 or more.			
	Infants.	Deaths.		Infants.	Deaths.	
Actual.		Expected. ¹	Actual.		Expected. ¹	
Infant death rates.....		4.0	5.4		10.5	7.6
Total.....	882	35	47.3	343	36	25.9
Under \$450.....	100	15	10.1	131	14	13.2
\$450—\$549.....	106	3	4.6	73	3	3.1
\$550—\$649.....	107	5	7.5	64	6	4.5
\$650—\$849.....	214	4	12.4	42	5	2.4
\$850—\$1,249.....	200	3	6.6	19	3	.6
\$1,250 and over.....	122	2	1.2	3		
No earnings.....	11	2	2.3	9	5	1.9
Not reported.....	22	1	2.6	2		.2

¹ Expected deaths are calculated by applying to the infants in each earnings group the rates for all infants (of foreign-born white mothers) in the same earnings group who lived at least 2 weeks in dwellings studied.

TABLE 89.—*Excess mortality in overcrowded dwellings, with effect of differences in nationality eliminated; infants (born in 1915 to foreign-born white mothers) who lived at least two weeks in dwellings studied.*

Nationality of mother.	Infants (of foreign-born white mothers) who lived at least 2 weeks in dwellings with specified number of persons per room.								
	Less than 1.			1 but less than 2.			2 or more.		
	Infants.	Deaths.		Infants.	Deaths.		Infants.	Deaths.	
		Actual.	Expected. ¹		Actual.	Expected. ¹		Actual.	Expected. ¹
Infant death rates.....	.....	4.0	5.5	.....	6.4	6.5	.....	10.5	8.6
Total.....	882	35	48.6	1,418	91	92.0	343	36	29.4
Jewish.....	342	(*)	9.1	506	(*)	13.5	83	(*)	2.2
Polish.....	68	(*)	8.5	345	(*)	43.3	183	(*)	22.9
Italian.....	107	(*)	5.4	230	(*)	11.6	55	(*)	2.8
Other foreign.....	365	(*)	25.6	337	(*)	23.6	22	(*)	1.5

¹ "Expected deaths" are based on rates for all infants in families of specified nationality. ² Not tabulated.

TABLE 90.—*Per cent of infant deaths, by average number of persons per room, earnings of father, and color and nativity of mother; infants born in 1915 who lived at least two weeks in dwellings studied.*

Earnings of father and color and nativity of mother.	Infants who lived at least 2 weeks in dwellings with specified average number of persons per room.													
	Total. ¹			Less than 1.			1 but less than 2.			2 or more.			Not reported.	
	In-fants.	Deaths.		In-fants.	Deaths.		In-fants.	Deaths.		In-fants.	Deaths.		In-fants.	Deaths.
		Num-ber.	Per ct. ²		Num-ber.	Per ct. ²		Num-ber.	Per ct. ²		Num-ber.	Per ct. ²		
All mothers.....	10,336	692	6.7	5,544	267	4.8	4,269	359	8.4	498	58	11.6	25	8
Earnings of father:														
Under \$450.....	1,457	160	11.0	446	43	9.6	824	91	11.0	180	22	12.2	7	4
\$450-\$549.....	1,387	111	8.0	548	38	6.9	731	64	8.8	105	7	6.7	3	2
\$550-\$649.....	1,428	105	7.4	609	36	5.9	726	61	8.4	87	7	.....	6	1
\$650-\$849.....	2,321	139	6.0	1,296	54	4.2	956	76	7.9	67	9	.....	2	.....
\$850-\$1,249.....	2,183	91	4.2	1,509	53	3.5	644	34	5.3	27	3	.....	3	1
\$1,250 and over.....	1,170	31	2.6	958	27	2.8	201	4	2.0	8	.....	.....	3	.....
No earnings.....	192	34	17.7	67	9	.....	108	17	15.7	7	8	.....	.....	.....
Not reported.....	198	21	10.6	111	7	6.3	79	12	.....	17	2	.....	1	.....
Native white mothers.....	6,464	395	6.1	4,108	187	4.6	2,237	193	8.6	107	15	14.0	12	.....
Earnings of father:														
Under \$450.....	428	53	12.4	160	12	7.5	239	36	15.1	28	5	.....	1	.....
\$450-\$549.....	613	53	8.6	281	20	7.1	312	30	9.6	20	3	.....	.....	.....
\$550-\$649.....	872	64	7.3	437	30	6.9	411	34	8.3	21	.....	.....	3	.....
\$650-\$849.....	1,655	97	5.9	1,019	46	4.5	614	48	7.8	20	3	.....	2	.....
\$850-\$1,249.....	1,745	75	4.3	1,283	49	3.8	452	26	5.8	8	.....	.....	2	.....
\$1,250 and over.....	951	26	2.7	824	22	2.7	119	4	3.4	5	.....	.....	3	.....
No earnings.....	81	14	.....	31	5	.....	47	7	.....	3	2	.....	.....	.....
Not reported.....	119	13	10.9	73	3	.....	43	8	.....	2	2	.....	1	.....
Foreign-born white mothers.....	2,649	166	6.3	882	35	4.0	1,418	91	6.4	343	36	10.5	6	4
Earnings of father:														
Under \$450.....	556	56	10.1	100	15	15.0	321	24	7.5	131	14	10.7	4	3
\$450-\$549.....	439	19	4.3	106	3	2.8	260	13	5.0	73	3	.....	.....	.....
\$550-\$649.....	414	28	7.0	107	5	4.7	242	18	7.4	64	6	.....	1	.....
\$650-\$849.....	549	32	5.8	214	4	1.9	293	23	7.8	42	5	.....	.....	.....
\$850-\$1,249.....	397	13	3.3	200	3	1.5	177	6	3.4	19	3	.....	1	1
\$1,250 and over.....	205	2	1.0	122	2	1.6	80	.....	.....	3	.....	.....	.....	.....
No earnings.....	47	10	.....	11	2	.....	27	3	.....	9	5	.....	.....	.....
Not reported.....	42	5	.....	22	1	.....	18	4	.....	2	.....	.....	.....	.....
Colored mothers.....	1,223	131	10.7	554	45	8.1	611	75	12.2	48	7	.....	7	4
Earnings of father:														
Under \$450.....	473	51	10.8	180	16	8.6	264	31	11.7	21	3	.....	2	1
\$450-\$549.....	335	39	11.6	161	15	9.3	159	21	13.2	12	1	.....	3	2
\$550 and over.....	314	28	8.9	166	9	5.4	139	16	11.5	7	2	.....	2	1
No earnings.....	64	10	.....	25	2	.....	34	7	.....	5	1	.....	.....	.....
Not reported.....	37	3	.....	16	3	.....	18	.....	.....	3	.....	.....	.....	.....

¹ Does not include 61 infants (25 subsequent deaths) surviving first two weeks, for whom housing data were not secured. ² Not shown where base is less than 100.

TABLE 91.—Percentage of infant deaths, by cause of death, sanitary arrangements of dwelling, earnings of father, and color and nationality of mother; infants born in 1915 who lived at least two weeks in dwellings studied.

Earnings of father and color and nationality of mother.	Infants who lived at least 2 weeks in dwellings of specified sanitary accommodations.									
	Dwellings with 3 specified items. ¹					Dwellings lacking 1 or more of 3 specified items.				
	Infants.	Deaths.				Infants.	Deaths.			
		All causes.		Gastric and intestinal.			All causes.		Gastric and intestinal.	
	Number.	Per cent. ²	Number.	Per cent. ²		Number.	Per cent. ²	Number.	Per cent. ²	
All mothers.....	4,486	197	4.4	66	1.5	5,850	495	8.5	230	3.9
Earnings of father:										
Under \$550.....	644	55	8.5	17	2.6	2,200	216	9.8	107	4.9
\$550-\$849.....	1,389	71	5.1	25	1.8	2,360	173	7.3	71	3.0
\$850-\$1,249.....	1,324	42	3.2	14	1.1	859	49	5.7	26	3.0
\$1,250-\$1,849.....	578	13	2.2	6	1.0	173	12	6.9	2	1.2
\$1,850 and over.....	385	5	1.3	.....	.....	34	1	.....	.....	.....
No earnings.....	72	8	11.1	4	5.6	120	26	21.7	15	12.5
Not reported.....	94	3	3.2	.....	.....	104	18	17.3	9	8.7
Native white mothers.....	3,273	135	4.1	48	1.5	3,191	260	8.1	135	4.2
Earnings of father:										
Under \$550.....	278	22	7.9	7	2.5	768	84	11.0	47	6.2
\$550-\$849.....	999	56	5.6	21	2.1	1,528	105	6.9	53	3.5
\$850-\$1,249.....	1,093	36	3.3	11	1.0	652	39	6.0	19	2.9
\$1,250-\$1,849.....	474	12	2.5	6	1.3	122	9	7.4	2	1.6
\$1,850 and over.....	329	5	1.5	.....	.....	26	.....	.....	.....	.....
No earnings.....	39	3	.....	3	.....	42	11	.....	7	.....
Not reported.....	61	1	1.6	.....	.....	58	12	20.7	7	12.1
Foreign-born white mothers.....	816	25	3.1	11	1.3	1,833	141	7.7	66	3.6
Earnings of father:										
Under \$550.....	139	10	7.2	4	2.9	856	65	7.6	38	4.4
\$550-\$849.....	296	8	2.8	3	1.0	677	53	7.8	15	2.2
\$850-\$1,249.....	211	5	2.4	3	1.4	186	8	4.3	7	3.8
\$1,250 and over.....	152	1	0.7	.....	.....	53	1	1.9	.....	.....
No earnings.....	12	1	.....	1	.....	35	9	.....	4	.....
Not reported.....	16	.....	.....	.....	.....	26	5	.....	2	.....
Jewish.....	389	6	1.5	4	1.0	542	17	3.1	4	0.7
Earnings of father:										
Under \$650.....	107	4	3.7	2	1.9	325	7	2.2	2	0.6
\$650 and over.....	286	1	0.4	1	0.4	190	5	2.6	1	0.5
No earnings.....	8	1	.....	1	.....	18	2	.....	1	.....
Not reported.....	8	.....	.....	.....	.....	9	3	.....	.....	.....
Polish.....	35	3	.....	1	.....	582	72	12.8	42	7.5
Earnings of father:										
Under \$650.....	20	2	.....	1	.....	404	51	12.6	30	7.4
\$650 and over.....	15	1	.....	.....	.....	139	15	10.8	8	5.8
No earnings.....	.....	.....	.....	.....	.....	10	4	.....	2	.....
Not reported.....	.....	.....	.....	.....	.....	9	2	.....	2	.....
Italian.....	80	3	3.8	.....	.....	314	16	5.1	4	1.3
Earnings of father:										
Under \$650.....	30	3	.....	.....	.....	213	12	5.6	4	1.9
\$650 and over.....	47	.....	.....	.....	.....	93	3	3.2	.....	.....
No earnings.....	.....	.....	.....	.....	.....	4	1	.....	.....	.....
Not reported.....	3	.....	.....	.....	.....	4	.....	.....	.....	.....
All other.....	312	13	4.2	6	1.9	415	36	8.7	16	3.9
Earnings of father:										
Under \$650.....	79	3	3.8	2	2.5	231	22	9.5	9	3.9
\$650 and over.....	224	10	4.5	4	1.8	177	12	6.8	6	3.4
No earnings.....	4	.....	.....	.....	.....	3	2	.....	1	.....
Not reported.....	5	.....	.....	.....	.....	4	.....	.....	.....	.....
Colored mothers.....	397	37	9.3	7	1.8	826	94	11.4	29	3.5
Earnings of father:										
Under \$550.....	227	23	10.1	6	2.6	581	67	11.5	22	3.8
\$550 and over.....	132	8	6.1	1	0.8	182	20	11.0	3	1.6
No earnings.....	21	4	.....	.....	.....	43	6	.....	4	.....
Not reported.....	17	2	.....	.....	.....	20	1	.....	.....	.....

¹ Bath, toilet connected with sewer and reserved for exclusive use of family.² Not shown where base is less than 50.

TABLE 92.—*Employment of mother at any time after marriage, during pregnancy of 1915, or during lifetime of infant born in 1915, by place of employment, earnings of father, and color and nativity of mother; mothers (maternal histories) and births in 1915.¹*

Earnings of father and color and nativity of mother.	Mothers. ²				Births in 1915. ¹				Live births in 1915.				
	Total.	Employed away from home at any time after marriage.		Total.	To mothers employed during pregnancy.		Total.	To mothers employed during lifetime of infant and within 12 months after the birth.					
		Num-ber.	Per-ct. ³		Away from home.			At home.					
					Num-ber.	Per-ct. ³		Num-ber.	Per-ct. ³				
Num-ber.	Per-ct. ³	Num-ber.	Per-ct. ³	Num-ber.	Per-ct. ³	Num-ber.	Per-ct. ³						
All mothers.....	11,169	2,562	22.9	11,613	1,400	12.1	1,819	15.7	10,797	855	7.9	1,929	17.9
Earnings of father:													
Under \$450.....	1,549	777	50.2	1,690	494	29.2	349	20.7	1,544	341	22.1	383	24.8
\$450-\$549.....	1,476	534	36.2	1,574	325	20.6	307	19.5	1,449	179	12.4	329	22.7
\$550-\$649.....	1,528	398	26.0	1,590	202	12.7	262	16.5	1,489	93	6.2	254	17.1
\$650-\$849.....	2,519	404	16.0	2,575	169	5.6	340	13.2	2,417	85	3.5	378	15.6
\$850-\$1,049.....	1,665	146	8.8	1,696	45	2.7	241	14.2	1,595	20	1.3	250	16.1
\$1,050-\$1,249.....	693	41	5.9	705	11	1.6	79	11.2	661	5	0.7	88	13.3
\$1,250 and over.....	1,289	54	4.2	1,307	16	1.2	144	11.0	1,221	7	0.6	144	11.8
No earnings.....	218	136	62.4	235	89	37.9	42	17.9	207	84	40.6	43	20.8
Not reported.....	232	72	31.0	241	49	20.3	55	22.8	214	41	19.2	54	25.2
Native white mothers.....	7,069	966	13.7	7,210	394	5.5	710	9.8	6,739	235	3.5	801	11.9
Earnings of father:													
Under \$450.....	463	188	40.6	477	74	15.5	58	12.2	449	69	15.4	73	16.3
\$450-\$549.....	661	158	23.9	686	86	12.5	79	11.5	644	42	6.5	86	13.4
\$550-\$649.....	949	171	18.0	971	74	7.6	120	12.4	908	25	2.8	123	13.5
\$650-\$849.....	1,807	212	11.7	1,840	75	4.1	162	8.8	1,726	38	2.2	189	11.0
\$850-\$1,049.....	1,308	84	6.4	1,328	27	2.0	134	10.1	1,251	10	.8	156	12.5
\$1,050-\$1,249.....	581	29	5.0	591	7	1.2	45	7.6	551	1	.2	53	9.6
\$1,250 and over.....	1,060	33	3.1	1,074	12	1.1	74	6.9	995	2	.2	78	7.8
No earnings.....	101	57	56.4	103	21	20.4	13	12.6	88	32	36.4	14	15.9
Not reported.....	139	34	24.5	140	18	12.9	25	17.9	127	16	12.6	29	22.8
Foreign-born white mothers	2,830	748	26.4	2,894	329	11.4	735	25.4	2,753	200	7.3	763	27.7
Earnings of father:													
Under \$450.....	594	228	38.4	610	113	18.5	146	23.9	588	70	11.9	167	28.4
\$450-\$549.....	472	161	34.1	479	70	14.6	123	25.7	449	43	9.6	130	29.0
\$550-\$649.....	433	136	31.4	449	66	14.7	98	21.8	429	33	7.7	98	22.8
\$650-\$849.....	590	123	20.8	600	47	7.8	142	23.7	570	26	4.6	152	26.6
\$850-\$1,049.....	317	44	13.9	327	9	2.8	94	28.7	309	8	2.6	86	27.8
\$1,050-\$1,249.....	103	10	9.7	104	3	2.9	31	29.8	100	2	2.0	33	33.0
\$1,250 and over.....	217	17	7.8	219	2	.9	68	31.1	212	2	.9	66	29.7
No earnings.....	53	22	41.5	53	13	24.5	14	26.4	50	12	24.0	14	28.0
Not reported.....	51	7	13.7	53	6	11.3	19	35.8	46	4	8.7	17	36.7
Colored mothers	1,270	848	66.8	1,509	677	44.9	374	24.8	1,305	420	32.2	365	28.0
Earnings of father:													
Under \$450.....	492	361	73.4	603	307	50.9	145	24.0	507	202	39.8	143	28.2
\$450-\$549.....	343	215	62.7	409	189	46.3	105	25.7	356	94	26.4	113	31.7
\$550-\$649.....	146	91	62.3	170	62	36.5	44	25.9	152	35	23.0	33	21.7
\$650-\$849.....	122	69	56.6	135	47	34.8	36	26.7	121	21	17.3	37	30.6
\$850-\$1,049.....	40	18	45.0	41	9	22.0	13	31.7	35	2	5.7	14	40.0
\$1,050-\$1,249.....	9	2	22.2	10	1	10.0	3	30.0	10	2	20.0	2	20.0
\$1,250 and over.....	12	4	33.3	14	2	14.3	2	14.3	14	3	21.4	3	21.4
No earnings.....	64	57	89.1	79	55	69.6	15	19.0	69	40	58.0	15	21.7
Not reported.....	42	31	73.8	48	25	52.1	11	22.9	41	21	51.2	8	19.5

¹ Includes miscarriages.² Mothers for whom maternal history was secured. Schedule did not include employment at home prior to pregnancy of 1915.³ Not shown where base is less than 100.

TABLE 93.—*Employment of mother at any time after marriage, during pregnancy of 1915, or during lifetime of infant born in 1915, by place of employment and nationality; foreign-born white mothers (maternal histories) and births in 1915.*¹

Nationality of mother.	Foreign-born white mothers. ²			Births in 1915 to foreign-born white mothers. ¹				Live births in 1915 to foreign-born white mothers.					
	Total.	Employed away from home at any time after marriage.		Total.	Employed during pregnancy of 1915.			Total.	Employed during lifetime of infant and within 12 months of birth.				
		Num-ber.	Per-cent.		At home.		Away from home.		Num-ber.	Per-cent.	Away from home.		
					Num-ber.	Per-cent.	Num-ber.				Per-cent.	Num-ber.	Per-cent.
Total.....	2,830	748	26.4	2,804	735	25.4	329	11.4	2,753	763	27.7	200	7.3
Jewish.....	995	66	6.6	1,011	289	28.5	13	1.3	961	289	30.1	9	0.9
Polish.....	634	421	66.4	655	104	15.9	215	32.8	625	116	18.6	146	23.4
Italian.....	433	53	12.2	440	162	36.8	17	3.9	412	165	40.0	7	1.7
All other.....	768	208	27.1	788	180	22.8	84	10.7	755	193	25.6	38	5.0
German.....	321	69	21.5	331	59	17.8	29	8.8	318	(?)	(?)	(?)	(?)
Irish, English, Scottish, and English-Can- adian.....	136	13	9.6	138	23	16.7	4	2.9	132	(?)	(?)	(?)	(?)
Bohemian.....	109	27	24.8	112	27	24.1	10	8.9	107	(?)	(?)	(?)	(?)
Lithuanian.....	102	67	65.7	105	34	32.4	30	28.6	100	(?)	(?)	(?)	(?)
Other.....	100	32	32.0	102	37	36.3	11	10.8	98	(?)	(?)	(?)	(?)

¹ Includes miscarriages.

² Mothers for whom maternal history was secured. Schedule did not include employment at home prior to pregnancy of 1915 birth.

³ Not available.

TABLE 94.—*Employment of mother away from home after marriage, by number of births,¹ earnings of father, and color and nativity of mother; mothers (maternal histories).*

Earnings of father during year after 1915 birth and color and nativity of mother.	Mothers reporting specified number of births. ¹								
	Total.	1-3.		4-6.			7 and over.		
		Num-ber.	Per-cent. ²	Total.	Num-ber.	Per-cent. ²	Total.	Num-ber.	Per-cent. ²
Native white mothers.....	4,884	604	12.4	1,487	215	14.5	698	147	21.1
Earnings of father:									
Under \$450.....	279	101	36.2	108	48	44.4	76	39	.....
\$450-\$549.....	432	97	22.5	142	36	25.4	87	25	.....
\$550-\$649.....	626	102	16.3	226	39	17.3	97	30	.....
\$650-\$849.....	1,254	133	10.6	384	50	13.0	169	29	17.2
\$850-\$1,249.....	1,328	78	5.9	387	22	5.7	174	13	7.5
\$1,250 and over.....	796	25	3.1	190	5	2.6	74	3	.....
No earnings.....	74	42	.....	17	10	.....	10	5	.....
Not reported.....	95	26	.....	33	5	.....	11	3	.....
Foreign-born white mothers.....	1,468	356	24.3	811	219	27.0	551	173	31.4
Earnings of father:									
Under \$450.....	269	107	39.8	177	59	33.3	148	62	41.9
\$450-\$549.....	244	75	30.7	150	55	36.7	78	31	.....
\$550-\$649.....	216	56	25.9	127	46	36.2	90	34	.....
\$650-\$849.....	339	65	19.2	154	34	22.1	97	24	.....
\$850-\$1,249.....	232	24	10.3	112	16	14.3	76	14	.....
\$1,250 and over.....	109	9	8.3	67	4	.....	41	4	.....
No earnings.....	28	15	.....	13	4	.....	12	3	.....
Not reported.....	31	5	.....	11	1	.....	9	1	.....
Colored mothers.....	679	403	59.4	334	238	71.3	257	207	80.5
Earnings of father:									
Under \$450.....	255	171	67.1	129	101	78.3	108	80	82.4
\$450-\$549.....	187	101	54.0	91	60	.....	65	54	.....
\$550-\$649.....	77	40	.....	32	25	.....	32	26	.....
\$650 and over.....	100	46	46.0	46	24	.....	37	23	.....
No earnings.....	34	28	.....	21	20	.....	9	9	.....
Not reported.....	26	17	.....	10	8	.....	6	6	.....

¹ Includes miscarriages.

² Not shown where base is less than 100.

15.—*Employment of mother during pregnancy, or within 12 months after the birth, by color of mother; live births in 1915.*

Employment of mother during pregnancy of 1915 or after 1915 birth.	Live births in 1915 to—			
	White mothers.		Colored mothers.	
	Number.	Per cent distribution. ¹	Number.	Per cent distribution. ¹
All.....	9,492	100.0	1,305	100.0
Employed during pregnancy or after birth.....	6,932	73.0	318	24.4
Only after death of infant.....	61	.6	12	.9
At home only ²	1,663	17.5	320	24.5
Away from home.....	835	8.8	655	50.2
Employment not reported.....	1			

¹Known when under one-tenth of 1 per cent.
²Includes 4 white mothers and 6 colored mothers who worked at home during pregnancy and away from home during life of infant, and 1 white mother who may have worked away during life of infant but for whom employment after birth was not reported.

16.—*Occupation of mother and employment away from home before and after marriage, by color and nationality; mothers (maternal histories).*

Employment of mother away from home, and color and nationality of mother.	Mothers.				
	Total.	Employed away from home.			
		Total.	Factory.	Domestic.	Other.
All mothers.....	11,169	8,791	5,438	1,918	1,435
Employed.....	2,371				
At home only.....	8,791	8,791	5,438	1,918	1,435
Marriage only.....	6,229	6,229	4,031	954	1,244
Marriage.....	2,562	2,562	1,407	964	191
Employment not reported.....	7				
Foreign-born mothers.....	9,899	7,627	5,342	893	1,392
Employed.....	2,267				
At home only.....	7,627	7,627	5,342	893	1,392
Marriage only.....	5,913	5,913	4,003	693	1,217
Marriage.....	1,714	1,714	1,339	200	175
Employment not reported.....	5				
Native-born mothers.....	7,089	5,520	3,830	503	1,187
Employed.....	1,545				
At home only.....	5,520	5,520	3,830	503	1,187
Marriage only.....	4,554	4,554	3,118	359	1,077
Marriage.....	966	966	712	144	110
Employment not reported.....	4				
Foreign-born mothers.....	2,630	2,107	1,512	390	205
Employed.....	722				
At home only.....	2,107	2,107	1,512	390	205
Marriage only.....	1,359	1,359	885	334	140
Marriage.....	748	748	627	56	65
Employment not reported.....	1				
Jewish.....	995	704	588	22	94
Employed.....	291				
At home only.....	704	704	588	22	94
Marriage only.....	638	638	552	18	68
Marriage.....	66	66	36	4	26

TABLE 96.—Occupation of mother and employment away from home before and after marriage, by color and nationality; mothers (maternal histories)—Continued.

Employment of mother away from home, and color and nationality of mother.	Mothers.				
	Total.	Employed away from home.			
		Total.	Factory.	Domestic.	Other.
Polish.....	634	590	516	54	20
Not employed.....	34				
Employed.....	599	590	516	54	29
Before marriage only.....	178	178	123	40	15
After marriage.....	421	421	393	14	14
Employment not reported.....	1				
Italian.....	433	147	111	4	21
Not employed.....	286				
Employed.....	147	147	111	4	22
Before marriage only.....	94	94	70	4	20
After marriage.....	53	53	41		12
German.....	321	270	114	135	21
Not employed.....	51				
Employed.....	270	270	114	135	21
Before marriage only.....	201	201	69	114	18
After marriage.....	69	69	45	21	3
Irish, English, Scotch, and English-Canadian.....	136	122	26	87	9
Not employed.....	14				
Employed.....	122	122	26	87	9
Before marriage only.....	109	109	21	80	8
After marriage.....	13	13	5	7	1
Bohemian.....	109	101	40	50	2
Not employed.....	8				
Employed.....	101	101	40	50	2
Before marriage only.....	74	74	17	55	2
After marriage.....	27	27	23	4	
Lithuanian.....	102	97	84	6	7
Not employed.....	5				
Employed.....	97	97	84	6	7
Before marriage only.....	30	30	21	3	6
After marriage.....	67	67	63	3	1
All other.....	100	67	33	23	11
Not employed.....	33				
Employed.....	67	67	33	23	11
Before marriage only.....	35	35	12	20	3
After marriage.....	32	32	21	3	8
Colored mothers.....	1,270	1,164	96	1,025	43
Not employed.....	104				
Employed.....	1,164	1,164	96	1,025	43
Before marriage only.....	316	316	28	261	27
After marriage.....	848	848	68	764	16
Employment not reported.....	2				

Occupation and time of employment of mother ¹ before marriage only and after marriage.	Mothers ¹ of specified color and nationality.												
	White.												Colored.
	Total.	Total.	Native.	Foreign born.								Total.	
				Total.	Jewish.	Polish.	Italian.	German.	Irish, English, Scotch, English-Canadian.	Bohemian.	Lithuanian.			All other.
Total.....	11,160	9,899	7,099	2,800	965	634	433	321	136	109	102	100	1,270
Not employed away from home.....	2,371	2,267	1,545	722	291	34	296	51	14	8	5	33	104
Employed away from home.....	8,791	7,632	5,554	2,107	704	599	147	270	122	101	97	67	1,164
Factory work.....	5,438	5,342	3,830	1,512	588	516	111	114	26	40	84	33	96
Domestic work.....	1,918	963	503	390	22	54	4	135	87	59	6	23	1,025
Other work.....	1,435	1,392	1,187	205	94	29	32	21	9	2	7	11	43
Before marriage only.....	6,229	5,913	4,554	1,359	638	178	94	201	109	74	30	35	316
Factory work.....	4,031	4,003	3,118	885	552	123	70	69	21	17	21	12	28
Domestic work.....	1,954	963	359	334	18	40	4	114	80	55	3	20	261
Other work.....	1,244	1,217	1,077	140	68	15	20	18	8	2	6	3	27
After marriage.....	2,562	1,714	966	748	66	421	53	69	13	27	67	32	848
Factory work.....	1,407	1,339	712	627	36	393	41	45	5	23	63	21	68
Domestic work.....	964	200	144	56	4	14	.....	21	7	4	3	3	764
Other work.....	191	175	110	65	26	.....	12	3	1	.....	1	8	16
Employment not reported.....	7	6	4	1	.....	1	.....	.....	.....	.....	.....	.....	2

¹ Based on 11,169 mothers for whom maternal history was secured.

INFANT MORTALITY, BALTIMORE, MD.

TABLE 98.—Occupation and place of employment of mother during pregnancy, by color and nationality; births in 1915.¹

Occupation and place of employment of mother during pregnancy of 1915 issue.	Births in 1915 ¹ to mothers of specified color and nationality.													
	White							Colored.						
	Total births. ¹	Native.						Foreign born.						Total.
		Total.	Jewish.	Polish.	Italian.	German.	Irish, English, Scotch, and English-Canadian. ²	Bohemian.	Lithuanian.	All other. ³				
All mothers.....	11,613	7,210	1,011	655	440	331	138	112	105	102	1,509			
Not employed.....	8,391	6,105	709	335	261	243	111	75	41	54	457			
Employed.....	3,219	1,104	302	319	179	88	27	37	64	48	1,051			
At home.....	1,819	1,710	1,735	104	162	59	23	27	34	37	374			
Keeping lodgers.....	732	422	66	46	61	28	20	6	15	19	46			
Sewing (for factory).....	174	87	136	22	69	5	.....	4	17	4	1			
Sewing (not for factory).....	90	32	13	7	2	2	.....	.....	.....	2	2			
Laundering.....	58	18	1	.....	.....	7	.....	8	.....	1	1			
Helping in husband's business.....	362	56	1	.....	.....	.....	.....	.....	.....	.....	.....
Doing other home work.....	247	107	163	23	18	12	3	7	2	10	3			
Away from home.....	124	56	28	6	12	5	.....	2	.....	1	14			
Factory operatives.....	1,400	394	329	215	17	29	4	10	30	11	677			
Canning, shucking.....	1,609	272	268	205	11	17	2	7	29	8	49			
Clothing.....	332	103	222	191	3	13	1	6	4	3	7			
Other factory.....	133	54	52	8	7	1	.....	1	25	3	15			
Charwork, laundress, etc.....	144	129	2	6	.....	3	.....	.....	.....	.....	385			
Domestic servant.....	54	42	12	2	.....	8	.....	.....	.....	.....	209			
Any other occupation.....	232	15	8	1	.....	1	.....	.....	.....	.....	34			
Employment not reported.....	120	86	3	7	6	3	.....	2	.....	.....	1			
	3	1	1	1	.....	1	.....	1	.....	.....	.....

Occupation and place of employment of mother during pregnancy of 1915 issue.	Per cent distribution. ⁴													
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All mothers.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not employed.....	72.3	78.5	84.7	63.2	51.1	59.3	73.4	80.4	87.0	82.9	80.6			
Employed.....	27.7	21.5	15.3	36.8	48.7	40.7	26.6	19.6	13.0	17.1	19.4			
At home.....	15.7	14.3	9.8	25.4	37.0	33.5	18.8	14.5	14.3	18.6	14.3			
Keeping lodgers.....	6.3	6.3	3.9	9.1	7.0	15.6	5.4	6.4	6.4	18.6	2.0			

Away from home.....	4.1	1.4	5.5	1.9	2.8	9	2.7	1.5	2.9	1.8	28.6	1.0	44.9
Factory operatives.....	12.1	7.2	5.5	11.4	1.3	32.8	3.9	5.5	2.9	8.9	28.6	1.0	44.9
Canning, shucking, etc.....	5.2	3.5	3.5	10.0	.9	31.3	2.5	5.1	1.4	6.2	27.6	7.8	3.2
Clothing.....	2.9	3.2	1.4	7.7	.7	29.2	1.7	3.9	.7	5.4	3.8	2.9	1.8
Other factory.....	1.1	1.0	1.7	1.8	.2	1.2	1.6	.3	.7	.9	23.8	1.0	1.8
Charwork, laundress, etc.....	1.2	1.3	1.6	1.5	.2	.9	.2	2.4	1.4	1.8	1.0	1.0	1.9
Domestic servant.....	3.8	.5	.6	.4	.4	.3	.2	.9	.7	.9	1.0	2.9	12.5
Any other occupation.....	2.0	.2	.2	.3	.1	1.1	1.4	.3	.3	.9	1.0	2.9	2.3
Employment not reported.....	1.0	.9	.9	.7	.3	.2	.2	.2	.2	.2	.2	.2	.1

¹ Includes miscarriages.

² Includes 10 Irish, 19 English, 8 Scotch, and 10 English-Canadian.

³ Includes 24 Russian, 19 Greek, 13 Magyar, 8 Norwegian, 6 Serbian, 5 French, 5 Slovak, 4 Rumanian, 4 Ruthenian, 3 French-Canadian, 3 Dutch, 2 Slavic (n. o. s.), 2 Spanish, 2 Swedish, 1 Arabian, and 1 Danish.

⁴ Not shown when less than one-tenth of 1 per cent.

TABLE 99.—*Occupation of mother, by place and time of employment; live births in 1915 to mothers employed.*

Occupation of mother.	Live births to mothers employed.			
	During 1915 pregnancy.		During lifetime of infant.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
All mothers employed.....	2,911	100.0	2,794	100.0
At home.....	1,682	57.8	1,829	65.5
Keeping lodgers.....	700	24.0	995	34.1
Sewing (for factory).....	161	5.5	143	5.1
Sewing (not for factory).....	71	2.4	66	2.4
Laundering.....	312	10.7	303	10.9
Helping in husband's business.....	328	11.3	345	12.4
Doing other home work.....	110	3.8	124	4.5
Away from home.....	1,229	42.2	855	30.7
Cannery operative.....	315	10.8	220	7.9
Other factory operative.....	253	8.0	141	5.1
Charwork, laundry, etc.....	396	13.6	297	10.7
Domestic.....	191	6.5	121	4.3
All other.....	104	3.6	75	2.7
Not reported.....			1	

TABLE 100.—*Employment of mother during pregnancy of 1915 and during lifetime of infant, by color and nationality; births in 1915.¹*

Color and nationality of mother.	Per cent of mothers employed	
	During pregnancy. ²	During life of infant. ³
Total.....	27.7	25.4
White.....	21.5	21.5
Native.....	15.3	15.4
Foreign born.....	36.8	35.0
Jewish.....	29.9	31.0
Polish.....	48.7	41.9
Italian.....	40.7	41.7
Other.....	32.5	30.6
Colored.....	60.6	60.2

¹ Includes miscarriages.² Based on total births in 1915.³ Based on live births.

TABLE 101.—*Employment of mother during pregnancy of 1915, by employment after the birth, at home and away from home, by color of mother; live births in 1915.*

Employment of mother.	Live births in 1915 to—					
	All mothers.		White mothers.		Colored mothers.	
	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.
Total.....	10,797	1,117	9,492	910	1,305	207
Employed at home during 1915 pregnancy.....	1,682	159	1,359	118	323	41
Not employed after birth of infant.....	147	23	130	20	17	3
Employed after death of infant:						
At home.....	54	54	35	35	19	19
Away.....	10	10	4	4	6	6
Employed during life of infant:						
At home.....	1,412	70	1,172	58	240	12
Away.....	58	2	17	1	41	1
Employment after birth not reported.....	1		1			
Employed away during 1915 pregnancy.....	1,229	221	659	106	570	115
Not employed after birth of infant.....	363	41	274	27	89	14
Employed after death of infant:						
At home.....	10	10	4	4	6	6
Away.....	104	104	51	51	53	53
Employed during life of infant:						
At home.....	158	10	71	4	87	6
Away.....	594	56	259	20	335	36
Not employed during 1915 pregnancy ¹	7,886	737	7,474	686	412	51
Not employed after birth of infant.....	7,250	640	6,932	603	318	37
Employed after death of infant:						
At home.....	22	22	19	19	3	3
Away.....	51	51	42	42	9	9
Employed during life of infant:						
At home.....	359	7	321	6	38	1
Away.....	203	16	159	15	44	1
Employment after birth not reported.....	1	1	1	1		

¹ Includes 3 live births (2 white, 1 colored) and 1 death (white); employment during 1915 pregnancy not reported.

TABLE 102.—*Infant mortality rates, by mother's employment away from home during pregnancy or within year after birth, earnings of father, and color and nativity of mother; live births in 1915.*

Earnings of father and color and nativity of mother.	Live births in 1915 to mothers—					
	Employed away from home during pregnancy or within year after birth. ¹			Not employed away from home during pregnancy or within year after birth.		
	Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²
All mothers.....	1,553	302	194.5	9,244	815	88.2
Earnings of father:						
Under \$550.....	891	181	203.1	2,102	232	110.4
\$550-\$849.....	408	69	166.1	3,498	325	92.9
\$850-\$1,249.....	61	10	.....	2,195	148	67.4
\$1,250 and over.....	18	5	.....	1,203	74	61.5
No earnings.....	112	24	214.3	95	19	.....
Not reported.....	63	13	.....	151	17	112.6
Native white mothers.....	501	99	197.6	6,238	547	87.7
Earnings of father:						
Under \$550.....	216	42	194.4	877	115	131.1
\$550-\$849.....	167	30	179.6	2,467	233	94.4
\$850-\$1,249.....	36	5	.....	1,766	121	68.5
\$1,250 and over.....	12	4	.....	983	63	64.1
No earnings.....	41	11	.....	47	5	.....
Not reported.....	29	7	.....	98	10	.....
Foreign-born white mothers.....	381	70	183.7	2,372	194	81.8
Earnings of father:						
Under \$550.....	213	43	201.9	824	70	85.0
\$550-\$849.....	128	19	148.4	871	77	88.4
\$850 and over.....	18	2	.....	603	32	53.1
No earnings.....	16	3	.....	34	10	.....
Not reported.....	6	3	.....	40	5	.....
Colored mothers.....	671	133	198.2	634	74	116.7
Earnings of father:						
Under \$550.....	462	96	207.8	401	47	117.2
\$550 and over.....	126	24	190.5	206	21	101.9
No earnings.....	55	10	.....	14	4	.....
Not reported.....	28	3	.....	13	2	.....

¹ Includes 2 mothers whose employment was not reported.

² Not shown where base is less than 100.

TABLE 103.—Infant mortality rates (by cause of death) and stillbirth rates, by employment of mother during pregnancy and color and nativity of mother; births in 1915.

Employment during pregnancy of 1915, and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.					
		Number.	Per 1,000 births. ¹		Total.		Early infancy.		All other causes.	
					Number.	Infant mortality rate. ¹	Number.	Infant mortality rate. ¹	Number.	Infant mortality rate. ¹
All mothers.....	11,195	398	35.6	10,797	1,117	103.5	407	37.7	710	65.8
* employed.....	8,123	240	29.5	7,883	736	93.4	263	37.2	443	56.2
employed at home.....	1,752	70	40.0	1,682	159	94.5	44	26.2	115	68.4
employed away from home.....	1,317	88	66.8	1,229	221	179.8	70	57.0	151	122.9
employment not reported.....	3			3	1				1	
Native white mothers.....	6,937	198	28.5	6,739	646	95.9	257	38.1	389	57.7
* employed.....	5,896	162	27.5	5,734	541	94.3	223	38.9	318	55.5
employed at home.....	674	18	26.7	656	56	85.4	18	27.4	38	57.9
employed away from home.....	396	18	49.2	348	49	140.8	16	46.0	33	94.8
employment not reported.....	1			1						
Foreign-born white mothers.....	2,837	84	29.6	2,753	264	95.9	85	30.9	179	65.0
* employed.....	1,791	53	29.6	1,738	144	82.9	50	28.8	94	54.1
employed at home.....	723	20	27.7	703	62	88.2	15	21.3	47	66.9
employed away from home.....	323	11	34.2	311	57	183.3	20	64.3	37	119.0
employment not reported.....	1			1	1				1	
Colored mothers.....	1,421	116	81.6	1,305	207	158.6	65	49.8	142	108.8
* employed.....	426	25	57.3	411	51	124.1	20	48.7	31	75.4
employed at home.....	355	32	90.1	323	41	126.9	11	34.1	30	92.9
employed away from home.....	629	59	93.8	570	115	201.8	34	59.6	81	142.1
employment not reported.....	1			1						

¹ Not shown where base is less than 100.

TABLE 104.—*Excess infant mortality (by cause of death) and stillbirth rates among infants of mothers employed during pregnancy, over those expected when effect of difference in color and nationality and earnings of father is eliminated; births in 1915.*

Employment of mother during pregnancy.	Total births.	Stillbirths.		Live births.	Deaths from all causes.		Early infancy.		All other causes.	
		Num-ber.	Per 1,000 ¹ births.		Num-ber.	Infant mortality rate. ¹	Num-ber.	Infant mortality rate. ¹	Num-ber.	Infant mortality rate. ¹
ALL MOTHERS.										
Not employed:										
Actual	8,123	240	29.5	7,883	736	93.4	263	37.2	443	56.2
Expected ²		256	31.5		759	95.3	260	36.8	469	59.5
Employed at home:										
Actual	1,752	70	40.0	1,682	159	94.5	44	26.2	115	68.4
Expected ²		70	40.0		176	104.6	62	36.9	114	68.9
Employed away from home:										
Actual	1,317	88	66.8	1,229	221	179.8	70	57.0	151	122.9
Expected ²		72	54.7		170	138.3	54	42.9	116	94.4
Employment not reported	3			3	1				1	
NATIVE WHITE MOTHERS.										
Not employed:										
Actual	5,896	162	27.5	5,734	541	94.3	123	21.9	318	55.5
Expected ²		168	28.5		538	93.8	217	37.8	321	55.9
Employed at home:										
Actual	674	18	26.7	656	56	85.4	15	27.4	28	57.9
Expected ²		19	28.2		65	99.1	23	38.1	40	61.9
Employed away from home:										
Actual	366	18	49.2	348	49	140.8	16	46.0	23	64.8
Expected ²		11	30.1		42	120.7	15	43.1	27	77.6
Employment not reported	1			1						
FOREIGN-BORN WHITE MOTHERS.										
Not employed:										
Actual	1,791	53	29.6	1,738	144	82.9	50	28.8	94	54.1
Expected ²		53	29.6		156	90.9	62	39.9	106	61.9
Employed at home:										
Actual	723	20	27.7	703	62	88.2	15	21.3	47	66.9
Expected ²		22	30.4		62	88.2	21	29.9	41	58.3
Employed away from home:										
Actual	322	11	34.2	311	57	183.3	20	64.3	27	119.9
Expected ²		9	28.0		44	141.5	12	38.6	32	102.9
Employment not reported	1			1	1				1	
COLORED MOTHERS.										
Not employed:										
Actual	436	25	57.3	411	51	124.1	20	48.7	31	73.4
Expected ²		35	80.3		63	153.3	21	51.1	42	102.3
Employed at home:										
Actual	355	32	90.1	323	41	126.9	11	34.1	30	92.9
Expected ²		29	81.7		49	151.7	16	49.5	33	102.3
Employed away from home:										
Actual	629	59	93.8	570	115	201.8	34	59.6	81	142.1
Expected ²		52	82.7		84	147.4	27	49.4	57	100.9
Employment not reported	1			1						

¹ Not shown where base is less than 100.

² Expected stillbirths and deaths are calculated by applying to the births (or live births) in each nationality, earnings and employment of mother group, the average rates prevailing in the same nationality and earnings group; among the foreign-born white mothers average rates prevailing in each nationality group are used.

TABLE 105.—Prevalence of premature births, by employment during pregnancy and color and nativity of mother; live births in 1915.

Employment during pregnancy of 1915, and color and nativity of mother.	Live births.				
	Total.	Full term.	Premature births.		Term not reported.
			Number.	Per cent. ¹	
All mothers.....	10,797	10,196	501	5.5	10
Not employed.....	7,883	7,430	450	5.7	3
Employed at home.....	1,682	1,615	65	3.9	2
Employed away from home.....	1,229	1,149	76	6.2	4
Employment not reported.....	3	2			1
Native white mothers.....	6,739	6,322	415	6.2	2
Not employed.....	5,734	5,377	356	6.2	1
Employed at home.....	656	619	36	5.5	1
Employed away from home.....	348	325	23	6.6	
Employment not reported.....	1	1			
Foreign-born white mothers.....	2,753	2,654	97	3.5	2
Not employed.....	1,738	1,669	67	3.9	2
Employed at home.....	703	687	16	2.3	
Employed away from home.....	311	297	14	4.5	
Employment not reported.....	1	1			
Colored mothers.....	1,305	1,220	79	6.1	6
Not employed.....	411	384	27	6.6	
Employed at home.....	323	309	13	4.0	1
Employed away from home.....	570	527	39	6.8	4
Employment not reported.....	1				1

¹ Not shown where base is less than 100.

TABLE 106.—*Infant mortality rates, by cause of death and by employment of mother during pregnancy and color and nativity; full-term live births in 1915.*

Employment during pregnancy of 1915, and color and nativity of mother.	Full-term live births.	Infant mortality rates. ¹		
		All causes.	Early infancy.	All other causes.
All mothers.....	10,196	77.7	14.7	63.0
Not employed.....	7,430	67.2	13.9	53.3
Employed at home.....	1,615	76.2	9.3	66.9
Employed away from home.....	1,149	147.1	27.9	119.2
Employment not reported.....	2			
Native white mothers.....	6,322	68.3	13.4	54.9
Not employed.....	5,377	67.0	13.9	53.1
Employed at home.....	619	63.0	6.5	56.5
Employed away from home.....	325	101.5	18.5	83.0
Employment not reported.....	1			
Foreign-born mothers.....	2,654	78.7	15.8	62.9
Not employed.....	1,669	63.5	13.2	50.3
Employed at home.....	667	78.6	11.6	67.0
Employed away from home.....	297	161.6	40.4	121.2
Employment not reported.....	1			
Colored mothers.....	1,220	123.8	18.9	104.9
Not employed.....	384	85.9	15.6	70.3
Employed at home.....	309	97.1	9.7	87.4
Employed away from home.....	527	167.0	26.6	140.6

¹ Not shown where base is less than 100.TABLE 107.—*Interval between cessation of work and confinement, by occupation and color of mother; births in 1915¹ to mothers employed during pregnancy.*

Occupation and place of employment during pregnancy of 1915 and color of mother.	Total births. ¹	Per cent ² of births ¹ to mothers reporting specified interval between cessation of work and confinement.				
		None.	Under 2 weeks.	2 weeks, under 2 months.	2 months and over.	Interval not reported.
All mothers employed during pregnancy.....	3,219	45.1	7.2	10.7	35.6	1.3
Employed at home.....	1,819	67.1	6.3	8.6	16.7	1.3
Keeping lodgers.....	732	86.1	2.0	3.3	7.1	1.5
Sewing (for factory).....	174	32.8	8.6	16.7	40.8	1.1
Sewing (not for factory).....	80					
Laundering.....	362	48.3	10.2	15.2	25.1	1.1
Husband's business.....	347	70.3	9.2	8.1	11.8	.6
Other home work.....	124	69.4	8.1	10.5	8.1	4.0
Employed away from home.....	1,400	16.6	8.5	13.4	60.1	1.4
Factory operatives.....	609	7.1	8.5	12.3	70.6	1.5
Canning, shucking, etc.....	332	9.0	10.8	17.8	61.7	.6
Clothing.....	133	3.8	10.5	6.0	79.7	
Other factory.....	144	5.6	1.4	5.6	82.6	4.9
Charwork, laundress, etc.....	439	31.0	10.5	14.6	42.6	1.4
Domestic servant.....	232	13.4	5.6	15.5	65.1	.4
Any other occupation.....	120	18.3	6.7	10.8	61.7	2.5
White mothers.....	2,168	50.3	6.6	9.6	32.0	1.4
Employed at home.....	1,445	70.7	5.5	7.8	14.7	1.3
Employed away from home.....	723	9.7	8.9	13.3	66.5	1.7
Colored mothers.....	1,051	34.4	8.5	12.8	43.1	1.1
Employed at home.....	374	53.5	9.1	11.5	24.6	1.3
Employed away from home.....	677	23.9	8.1	13.6	53.3	1.0

¹ Includes miscarriages.² Not shown where base is less than 100.

TABLE 108.—*Infant deaths under 1 month per 1,000 live births and stillbirth rates, by interval between cessation of work and confinement, color of mother, and place of employment; births in 1915 to mothers employed during pregnancy.*

Interval between cessation of work and confinement, color of mother, and place of employment.	Births in 1915 to mothers employed during pregnancy.						
	Total births.	Stillbirths.		Infant deaths.			
		Number.	Per 1,000 births. ¹	Total.		Under 1 month of age.	
				Number.	Per 1,000 live births. ¹	Number.	Per 1,000 live births. ¹
Mothers employed at home:							
White.....	1,397	38	27.2	118	86.8	36	26.5
Interval—							
None or under 2 weeks....	1,067	23	21.6	83	79.5	24	23.0
2 weeks and over.....	312	14	44.9	32	107.4	11	36.9
Not reported.....	18	1	.....	3	.....	1	.....
Colored.....	355	32	90.1	41	128.9	14	43.3
Interval—							
None or under 2 weeks....	218	20	91.7	23	116.2	9	45.5
2 weeks and over.....	132	10	75.8	16	131.1	4	32.8
Not reported.....	5	2	.....	2	.....	1	.....
Mothers employed away from home:							
White.....	688	29	42.2	106	160.8	50	75.9
Interval—							
None or under 2 weeks...	116	7	60.3	16	146.8	9	82.6
2 weeks and over.....	560	21	37.5	89	165.1	41	76.1
Not reported.....	12	1	.....	1	.....	.....	.....
Colored.....	629	59	93.8	115	201.8	45	78.9
Interval—							
None or under 2 weeks....	186	18	96.8	48	285.7	19	113.1
2 weeks and over.....	436	40	91.7	65	164.1	26	65.7
Not reported.....	7	1	.....	2	.....	.....	.....

¹ Not shown where base is less than 100.

TABLE 109.—Age of infant when mother began work, by place of mother's employment and color and nationality of mother; infants born in 1915 to mothers employed during infant's first year of life, and subsequent infant deaths.

Age of infant, and place of employment of mother.	Infants of mothers of specified color and nationality who were employed during infant's life.								
	Total.			White.			Native.		
	In-fants.	Subsequent deaths in year.	Deaths before end of month of life.	In-fants.	Subsequent deaths in year.	Deaths before end of month of life.	In-fants.	Subsequent deaths in year.	Deaths before end of month of life.
Mothers employed after birth of infant.....	2,784	161	15	1,999	104	14	1,036	52	5
Age of infant:									
Under 1 month.....	755	58	2	686	46	2	282	23	
1 month.....	537	37	3	351	17	3	192	10	1
2 months.....	283	21	3	171	12	2	98	8	1
3 months.....	269	11		153	3		82		
4 months.....	166	9		109	7	1	73	4	1
5 months.....	117	11	3	67	9	3	36	2	1
6 months.....	152	3		98	2		54	1	
7 months.....	100	4	1	71	2	1	43	2	1
8 months.....	115	1		79	1		50		
9 months.....	102	4		71	3	1	40	2	
10 months.....	107	2	1	84	2	1	44		
11 months.....	58			46			35		
Not reported.....	13			13			7		
Employed at home.....	1,929	87	8	1,564	68	8	801	34	2
Age of infant:									
Under 1 month.....	695	45	2	652	41	2	266	21	
1 month.....	405	18	3	305	12	3	165	6	1
2 months.....	194	12	2	141	9	2	80	5	1
3 months.....	140	2		100			57		
4 months.....	97	1		72			46		
5 months.....	60	4		38	3		26	1	
6 months.....	86			62			34		
7 months.....	56	1		42			27		
8 months.....	49			31			22		
9 months.....	56	3	1	42	2	1	25	1	
10 months.....	54	1		46	1		30		
11 months.....	25			21			14		
Not reported.....	12			12			7		
Employed away from home.....	855	74	7	435	36	6	235	18	3
Age of infant:									
Under 1 month.....	60	13		34	5		14	2	
1 month.....	132	19	1	46	5		27	4	
2 months.....	99	9	1	30	3		18	3	
3 months.....	129	9		53	3		25		
4 months.....	69	8	1	37	7	1	27	4	1
5 months.....	57	7	3	29	6	3	10	1	1
6 months.....	66	3		36	2		20	1	
7 months.....	44	3	1	29	2	1	16	2	1
8 months.....	66	1		48	1		28		
9 months.....	46	1		29	1		15	1	
10 months.....	53	1	1	38	1	1	14		
11 months.....	23			25			21		
Not reported.....	1			1					

TABLE 110.—*Excess mortality among infants of mothers employed during infant's lifetime, by time of resumption of work, place of employment, and color and nationality of mother, over mortality expected when effect of differences in color and nationality of mother is eliminated; infants born in 1915 to mothers employed during infant's lifetime.*

Time of infant when mother began work, and color and nationality of mother.	Infants of mothers employed at home.			Infants of mothers employed away from home.		
	Total.	Deaths.		Total.	Deaths.	
		Actual.	Ex- pected. ¹		Actual.	Ex- pected. ¹
Total.....	1,929	87	92.4	855	74	46.5
Under 3 months.....	1,294	75	72.7	291	41	23.4
3 months, under 6.....	297	7	13.6	255	24	16.2
6 months and over.....	326	5	6.1	308	9	6.9
Age not reported.....	12			1		
Native white mothers.....	801	34	35.0	235	18	6.7
Under 3 months.....	513	32	27.7	59	9	2.2
3 months, under 6.....	129	1	5.0	62	5	2.9
6 months and over.....	152	1	2.3	114	4	1.6
Age not reported.....	7					
Foreign-born white mothers.....	763	34	31.1	200	18	11.0
Under 3 months.....	585	30	26.5	51	4	4.3
3 months, under 6.....	81	2	2.9	57	11	4.1
6 months and over.....	92	2	1.7	91	3	2.6
Age not reported.....	5			1		
Colored.....	365	19	26.3	420	38	28.8
Under 3 months.....	196	13	18.5	181	28	16.9
3 months, under 6.....	87	4	5.7	136	8	9.2
6 months and over.....	82	2	2.1	103	2	2.7

¹ Expected deaths are calculated by applying to the infants of employed mothers in each color and nationality group the average rates of subsequent deaths in the same color and nationality group. The number of infants whose mothers went to work during the first month of the infant's life is multiplied by the rate of subsequent deaths among all survivors of the first month; the number of infants whose mothers went to work during the second month is multiplied by the average of the rates of subsequent deaths among survivors at the beginning and survivors at the end of the second month; and similarly for each later month. The results are then added together to form the groups shown in the table. In calculating expected deaths in the foreign-born white group, calculations were made separately for the Jewish, Polish, Italian, and all other groups and the results added to form the total in the foreign-born white group.

TABLE 111.—*Excess mortality among infants of mothers employed during infant's lifetime, by place of employment, over mortality expected when effect of differences in infants' ages and in fathers' earnings is eliminated; infants born in 1915 to native white and to colored mothers.*

Earnings of father, and color, nativity, and place of employment of mother.	Infants whose mothers' employment began in some previous month. ¹			
	Surviving at beginning of ² —		Infant deaths. ³	
	Second month.	Twelfth month.	Actual.	Expected.
Mothers employed at home.....	266	1,033	47	55.1
Native white mothers.....	257	710	31	31.5
Earnings of father:				
Under \$550.....	50	141	10	10.0
\$550-\$949.....	111	300	7	14.1
\$950-\$1,249.....	71	196	12	6.1
\$1,250 and over.....	25	73	2	1.3
Colored mothers.....	39	323	16	23.6
Earnings of father:				
Under \$550.....	32	238	15	13.4
\$550 and over.....	7	85	1	5.2
Mothers employed away from home.....	30	490	40	28.1
Native white mothers.....	13	157	9	6.2
Earnings of father:				
Under \$550.....	7	95	8	4.6
\$550-\$949.....	5	51	1	1.6
\$950-\$1,249.....	1	9		
\$1,250 and over.....		2		
Colored mothers.....	17	323	31	21.9
Earnings of father:				
Under \$550.....	15	267	26	18.8
\$550 and over.....	2	56	5	3.1

¹ From this comparison are omitted (1) infants of foreign-born white mothers; (2) infants of native white and of colored mothers in families where the fathers earned nothing or amounts not reported; (3) the lifetime and deaths of infants lived in the months in which the mothers went to work—that is, if the mothers went to work in the tenth month, the lifetime and deaths in that month, and (4) lifetime and deaths of infants in cases where the age of the infant at the time the mother went to work was not reported.

² The numbers for months between the second and the twelfth are omitted.

³ The actual deaths are the sum of the deaths occurring month by month among the "infant survivors" at the beginning of each month. The expected deaths are the sum of the deaths among these infant survivors expected on the basis of monthly death rates among all infants of native white and of colored mothers respectively in the specified fathers' earnings group.

TABLE 112.—*Nationality of mother, by place of her employment and age of infant when mother began work; infants born in 1915 to mothers employed during infant's lifetime.*

Color and nationality of mother and place of employment.	Infants of specified age when mothers began work.				
	Under 3 months.		3 months and over.		Not reported.
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Mothers employed at home.....	1,294	100.0	623	100.0	12
Native white.....	513	39.6	261	45.1	7
Jewish.....	239	18.5	50	8.0	
Polish.....	74	5.7	41	6.6	1
Italian.....	124	9.6	40	6.4	1
All other foreign-born white.....	148	11.4	42	6.7	3
Colored.....	196	15.1	169	27.1	
Mothers employed away from home.....	291	100.0	563	100.0	1
Native white.....	59	20.3	176	31.3	
Polish.....	27	9.3	118	21.0	1
All other foreign-born white.....	24	8.2	30	5.3	
Colored.....	181	62.2	229	42.5	

TABLE 113.—*Earnings of father, by mother's place of employment, color and nativity; and age of infant when mother began work; infants of mothers employed during infant's lifetime.*

Earnings of father and color and nativity of mother.	Infants of specified age when mothers began work—									
	At home.					Away from home.				
	Under 3 months.		3 months and over.		Age not re-ported.	Under 3 months.		3 months and over.		Age not re-ported.
	Num-ber.	Per cent dis-tribu-tion.	Num-ber.	Per cent dis-tribu-tion.		Num-ber.	Per cent dis-tribu-tion.	Num-ber.	Per cent dis-tribu-tion.	
All mothers.....	1,294	100.0	623	100.0	12	291	100.0	563	100.0	1
Earnings of father:										
Under \$450.....	228	17.6	155	24.9	.....	119	40.9	222	39.4	.....
\$450-\$549.....	216	16.7	111	17.8	2	54	18.6	125	22.2	.....
\$550-\$649.....	175	13.5	78	12.5	1	23	7.9	69	12.3	1
\$650 and over.....	612	47.3	247	39.6	7	29	10.0	88	15.6	.....
No earnings.....	26	2.0	17	2.7	.....	50	17.2	34	6.0	.....
Not reported.....	37	2.9	15	2.4	2	16	5.5	25	4.4	.....
Native white.....	513	100.0	281	100.0	7	59	100.0	176	100.0	.....
Earnings of father:										
Under \$450.....	39	7.6	34	12.1	.....	16	27.1	53	30.1	.....
\$450-\$549.....	54	10.5	31	11.0	1	10	16.9	32	18.2	.....
\$550-\$649.....	84	16.4	39	13.9	.....	5	8.5	20	11.4	.....
\$650 and over.....	314	61.2	158	55.2	4	12	20.3	39	22.2	.....
No earnings.....	7	1.4	7	2.5	2	14	23.7	18	10.2	.....
Not reported.....	15	2.9	12	4.3	.....	2	3.4	14	8.0	.....
Foreign-born white.....	585	100.0	173	100.0	5	51	100.0	148	100.0	1
Earnings of father:										
Under \$450.....	123	21.0	44	25.4	.....	22	43.1	48	32.4	.....
\$450-\$549.....	95	16.2	34	19.7	1	10	19.6	33	22.3	.....
\$550-\$649.....	72	12.3	25	14.5	1	2	3.9	30	20.3	1
\$650 and over.....	299	46.0	65	37.6	3	11	21.6	27	18.2	.....
No earnings.....	10	1.7	4	2.3	.....	5	9.8	7	4.8	.....
Not reported.....	16	2.7	1	.6	.....	1	2.0	3	2.0	.....
Colored.....	196	100.0	169	100.0	.....	181	100.0	239	100.0	.....
Earnings of father:										
Under \$450.....	66	33.7	77	45.6	.....	81	44.8	121	50.6	.....
\$450-\$549.....	67	34.2	46	27.2	.....	34	18.8	60	25.1	.....
\$550-\$649.....	19	9.7	14	8.3	.....	16	8.8	19	7.9	.....
\$650 and over.....	29	14.8	24	14.2	.....	6	3.3	22	9.2	.....
No earnings.....	9	4.6	6	3.6	.....	31	17.1	9	3.8	.....
Not reported.....	6	3.1	2	1.2	.....	13	7.2	8	3.3	.....

TABLE 114.—Interval between cessation of work and confinement, by interval between confinement and resumption of work; infants of mothers employed away both during pregnancy and within year after the birth.

Interval between cessation of work and confinement.	Infants of mothers employed away during pregnancy and resuming such work within specified time after birth.			
	Under 3 months.		3 months and over.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	236	100.0	358	100.0
None.....	80	33.9	40	11.2
Under 2 weeks.....	23	9.7	24	6.7
2 weeks, under 2 months.....	43	18.2	49	13.7
2 months and over.....	88	37.3	241	67.3
Not reported.....	2	.8	4	1.1

TABLE 115.—Excess mortality among infants of mothers employed away from home during infant's lifetime, by mother's employment during pregnancy and age of infant when mother resumed work, over mortality expected when effect of differences in mother's color and nationality, and father's earnings is eliminated; infants of mothers employed away from home during infant's lifetime.

Age of infant when mother resumed work.	Infants of mothers employed away during lifetime of infant.					
	Mother employed away during pregnancy.			Mother not employed away during pregnancy.		
	Infants.	Deaths.		Infants.	Deaths.	
		Actual.	Ex-pected. ¹		Actual.	Ex-pected. ¹
All.....	594	56	35.0	260	18	10.7
Under 3 months.....	236	23	19.9	54	8	4.2
3 months, under 6.....	183	17	11.3	72	7	4.1
6 months and over.....	175	6	3.8	134	3	2.4

¹ See note 1, Table 110, p. 313.

² Includes 1 infant of a mother whose employment was not reported.

TABLE 116.—*Infant survivors and infant deaths, by type of feeding, month of life, place of mother's employment, and color and nationality of mother; infants of mothers employed during infant's lifetime.*

Month of life of infant, and place of employment, color, and nationality of mother.	Infants of mothers employed during infant's lifetime.								
	Total.		Breast fed.		Mixed fed.		Artificially fed.		Not reported.
	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.
All mothers employed during infant's life:									
Second month.....	753	5	597	2	55	.....	101	3	.....
Third month.....	1,282	7	860	1	177	2	245	4	.....
Fourth month.....	1,565	13	903	1	297	2	364	10	1
Fifth month.....	1,821	13	933	2	428	3	459	8	1
Sixth month.....	1,973	24	915	4	532	3	525	17	1
Seventh month.....	2,063	16	717	2	751	4	594	10	1
Eighth month.....	2,199	15	642	1	894	2	662	12	1
Ninth month.....	2,283	13	500	1	1,059	5	723	7	1
Tenth month.....	2,385	15	385	2	1,195	3	804	10	1
Eleventh month.....	2,471	11	294	.....	1,313	2	863	9	1
Twelfth month.....	2,566	14	242	3	1,405	4	919	7	.....
Employed at home during infant's life:									
Second month.....	693	4	566	2	43	.....	84	2	.....
Third month.....	1,091	3	791	1	110	.....	190	2	.....
Fourth month.....	1,280	9	813	1	192	.....	274	8	1
Fifth month.....	1,411	5	823	1	266	1	321	3	1
Sixth month.....	1,503	12	797	2	344	1	361	9	1
Seventh month.....	1,551	4	624	1	520	1	406	2	1
Eighth month.....	1,633	12	552	1	624	1	456	10	1
Ninth month.....	1,677	8	430	1	751	3	495	4	1
Tenth month.....	1,718	7	330	2	847	1	540	4	1
Eleventh month.....	1,766	9	241	.....	942	1	582	8	1
Twelfth month.....	1,811	6	196	1	997	1	618	4	.....
Employed away from home during infant's life:									
Second month.....	60	1	31	.....	12	.....	17	1	.....
Third month.....	191	4	69	.....	67	2	55	2	.....
Fourth month.....	285	4	90	.....	105	2	90	2	.....
Fifth month.....	410	8	110	.....	162	2	138	7	.....
Sixth month.....	470	12	118	2	188	2	164	8	.....
Seventh month.....	512	12	93	1	231	3	188	8	.....
Eighth month.....	566	3	90	.....	270	1	206	2	.....
Ninth month.....	606	5	70	.....	308	2	228	3	.....
Tenth month.....	667	8	55	.....	348	2	264	6	.....
Eleventh month.....	705	2	53	.....	371	1	281	1	.....
Twelfth month.....	755	8	46	2	408	3	301	3	.....
White mothers employed during infant's life:									
Second month.....	684	4	567	2	42	.....	85	2	.....
Third month.....	1,028	5	746	1	97	1	185	3	.....
Fourth month.....	1,192	7	745	.....	177	.....	269	7	1
Fifth month.....	1,338	8	758	1	246	2	333	5	1
Sixth month.....	1,438	14	732	2	324	2	381	10	1
Seventh month.....	1,488	9	584	2	484	1	419	6	1
Eighth month.....	1,577	9	531	1	581	1	464	7	1
Ninth month.....	1,638	10	420	1	712	4	505	5	1
Tenth month.....	1,707	7	331	2	813	.....	562	5	1
Eleventh month.....	1,770	9	258	.....	908	1	503	8	1
Twelfth month.....	1,844	8	212	2	981	1	651	5	.....
Employed at home during infant's life—									
Second month.....	650	4	533	2	39	.....	78	2	.....
Third month.....	948	3	701	1	82	.....	165	2	.....
Fourth month.....	1,084	6	694	.....	155	.....	234	6	1
Fifth month.....	1,178	4	693	1	208	1	276	2	1
Sixth month.....	1,246	8	665	1	271	1	309	6	1
Seventh month.....	1,276	2	527	1	408	.....	340	1	1
Eighth month.....	1,336	8	474	1	483	.....	378	7	1
Ninth month.....	1,370	7	376	1	584	3	409	3	1
Tenth month.....	1,394	6	294	2	655	.....	444	4	1
Eleventh month.....	1,429	7	218	.....	730	.....	480	7	1
Twelfth month.....	1,468	5	177	1	780	.....	511	4	.....

TABLE 116.—*Infant survivors and infant deaths, by type of feeding, month of life, place of mother's employment, and color and nationality of mother; infants of mother employed during infant's lifetime—Continued.*

Month of life of infant, and place of employment, color, and nationality of mother.	Infants of mothers employed during infant's lifetime.								
	Total.		Breast fed.		Mixed fed.		Artificially fed.		Not reported.
	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.
White mothers employed during infant's life—Con.									
Employed away from home during infant's life—									
Second month.....	34		24		3		7		
Third month.....	80	2	45		15	1	20	1	
Fourth month.....	108	1	51		22		35	1	
Fifth month.....	160	4	65		38	1	57	3	
Sixth month.....	192	6	67	1	53	1	72	4	
Seventh month.....	212	7	57	1	76	1	79	5	
Eighth month.....	241	1	57		98	1	86		
Ninth month.....	268	3	44		128	1	96		2
Tenth month.....	313	1	37		158		118	1	
Eleventh month.....	341	2	40		178	1	123	1	
Twelfth month.....	376	3	35	1	201	1	140	1	
Native mothers employed during infant's life—									
Second month.....	282	2	220	1	16		46	1	
Third month.....	471	3	325		30	1	116	2	
Fourth month.....	565	6	336		61		168	6	
Fifth month.....	641	6	346	1	90	1	205	4	
Sixth month.....	707	6	342	1	130		235	5	
Seventh month.....	736	3	285	1	197		254	2	
Eighth month.....	787	3	262		246		279	3	
Ninth month.....	826	5	217		307	3	302	2	
Tenth month.....	871	4	172	2	366		333	2	
Eleventh month.....	907	4	131		424	1	352	3	
Twelfth month.....	947	5	105	1	465	1	377	3	
Employed at home during infant's life—									
Second month.....	268	2	210	1	15		43	1	
Third month.....	430	2	303		23		104	2	
Fourth month.....	507	5	311		52		144	5	
Fifth month.....	559	3	318	1	74	1	167	1	
Sixth month.....	602	3	312		102		188	3	
Seventh month.....	625	1	260	1	161		204		
Eighth month.....	658	3	235		202		221	3	
Ninth month.....	682	3	194		252	2	236	1	
Tenth month.....	701	4	157	2	292		252	2	
Eleventh month.....	722	3	113		341		268	3	
Twelfth month.....	749	3	89		378		282	3	
Employed away from home during infant's life—									
Second month.....	14		10		1		3		
Third month.....	41	1	22		7	1	12		
Fourth month.....	58	1	25		9		24	1	
Fifth month.....	82	3	28		16		38	3	
Sixth month.....	105	3	30	1	28		47	2	
Seventh month.....	111	2	25		36		50	2	
Eighth month.....	129		27		44		58		
Ninth month.....	144	2	23		55	1	66	1	
Tenth month.....	170		15		74		81		
Eleventh month.....	185	1	18		83	1	84		
Twelfth month.....	198	2	16	1	87	1	95		
Foreign-born mothers employed during infant's life—									
Second month.....	402	2	337	1	26		39	1	
Third month.....	557	2	421	1	67		69	1	
Fourth month.....	627	1	409		116		101	1	1
Fifth month.....	697	2	412		156	1	128	1	1
Sixth month.....	731	8	390	1	194	2	146	5	1
Seventh month.....	752	6	299	1	287	1	165	4	1
Eighth month.....	790	6	269	1	335	1	185	4	1
Ninth month.....	812	5	203	1	405	1	203	3	1
Tenth month.....	836	3	159		447		229	3	1
Eleventh month.....	863	5	127		484		251	5	1
Twelfth month.....	897	3	107	1	516		274	2	

TABLE 116.—*Infant survivors and infant deaths, by type of feeding, month of life, place of mother's employment, and color and nationality of mother; infants of mothers employed during infant's lifetime—Continued.*

Month of life of infant, and place of employment, color, and nationality of mother.	Infants of mothers employed during infant's lifetime.								
	Total.		Breast fed.		Mixed fed.		Artificially fed.		Not reported.
	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	
Foreign-born mothers employed during infant's life—Continued.									
Employed at home during infant's life—									
Second month.....	382	2	323	1	24	.....	35	1	.....
Third month.....	518	1	398	1	59	.....	61	.....	.....
Fourth month.....	577	1	383	.....	103	.....	90	1	1
Fifth month.....	619	1	375	.....	134	.....	109	1	1
Sixth month.....	644	5	353	1	169	1	121	3	1
Seventh month.....	651	1	267	.....	247	.....	136	1	1
Eighth month.....	678	5	239	1	281	.....	157	4	1
Ninth month.....	688	4	182	1	332	1	173	2	1
Tenth month.....	693	2	137	.....	363	.....	192	2	1
Eleventh month.....	707	4	105	.....	389	.....	212	4	1
Twelfth month.....	719	2	88	1	402	.....	229	1	.....
Employed away from home during infant's life—									
Second month.....	20	.....	14	.....	2	.....	4	.....	.....
Third month.....	39	1	23	.....	8	.....	8	1	.....
Fourth month.....	50	.....	26	.....	13	.....	11	.....	.....
Fifth month.....	78	1	37	.....	22	1	19	.....	.....
Sixth month.....	87	3	37	.....	25	1	25	2	.....
Seventh month.....	101	5	32	1	40	1	29	3	.....
Eighth month.....	112	1	30	.....	54	1	28	.....	.....
Ninth month.....	124	1	21	.....	73	.....	30	1	.....
Tenth month.....	143	1	22	.....	84	.....	37	1	.....
Eleventh month.....	156	1	22	.....	95	.....	39	1	.....
Twelfth month.....	178	1	19	.....	114	.....	45	1	.....
Jewish mothers employed during infant's life—									
Second month.....	152	.....	134	.....	10	.....	8	.....	.....
Third month.....	219	.....	175	.....	30	.....	14	.....	.....
Fourth month.....	241	.....	155	.....	59	.....	26	.....	1
Fifth month.....	255	.....	147	.....	75	.....	32	.....	1
Sixth month.....	266	.....	135	.....	95	.....	35	.....	1
Seventh month.....	269	.....	92	.....	135	.....	41	.....	1
Eighth month.....	275	.....	80	.....	145	.....	49	.....	1
Ninth month.....	281	1	54	.....	167	1	59	.....	1
Tenth month.....	283	1	40	.....	175	.....	67	1	1
Eleventh month.....	288	.....	29	.....	180	.....	78	.....	1
Twelfth month.....	293	.....	20	.....	187	.....	86	.....	.....
Employed at home during infant's life—									
Second month.....	150	.....	133	.....	10	.....	7	.....	.....
Third month.....	216	.....	173	.....	30	.....	13	.....	.....
Fourth month.....	237	.....	153	.....	59	.....	24	.....	1
Fifth month.....	250	.....	145	.....	74	.....	30	.....	1
Sixth month.....	260	.....	133	.....	94	.....	32	.....	1
Seventh month.....	263	.....	90	.....	134	.....	38	.....	1
Eighth month.....	269	.....	78	.....	144	.....	46	.....	1
Ninth month.....	275	1	54	.....	165	1	55	.....	1
Tenth month.....	276	1	40	.....	172	.....	63	1	1
Eleventh month.....	279	.....	29	.....	175	.....	74	.....	1
Twelfth month.....	284	.....	20	.....	182	.....	82	.....	.....
Employed away from home during infant's life—									
Second month.....	2	.....	1	.....	.....	.....	1	.....	.....
Third month.....	3	.....	2	.....	.....	.....	1	.....	.....
Fourth month.....	4	.....	2	.....	.....	.....	2	.....	.....
Fifth month.....	5	.....	2	.....	1	.....	2	.....	.....
Sixth month.....	6	.....	2	.....	1	.....	3	.....	.....
Seventh month.....	6	.....	2	.....	1	.....	3	.....	.....
Eighth month.....	6	.....	2	.....	1	.....	3	.....	.....
Ninth month.....	6	.....	2	.....	2	.....	4	.....	.....
Tenth month.....	7	.....	.....	.....	3	.....	4	.....	.....
Eleventh month.....	9	.....	.....	.....	5	.....	4	.....	.....
Twelfth month.....	9	.....	.....	.....	5	.....	4	.....	.....

TABLE 116.—*Infant survivors and infant deaths, by type of feeding, month of life, place of mother's employment, and color and nationality of mother; infants of mother employed during infant's lifetime—Continued.*

Month of life of infant, and place of employment, color, and nationality of mother.	Infants of mothers employed during infant's lifetime.								
	Total.		Breast fed.		Mixed fed.		Artificially fed.		Not reported.
	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	
Polish mothers employed during infant's life—									
Second month.....	66		54		3		9		
Third month.....	85	1	63		10		12	1	
Fourth month.....	99		68		18		13		
Fifth month.....	125	1	77		27	1	21		
Sixth month.....	135	4	78		31	1	26	3	
Seventh month.....	146	5	63	1	55	1	28	3	
Eighth month.....	161	3	66	1	69	1	26	1	
Ninth month.....	170	2	50	1	94		26	1	
Tenth month.....	186		45		110		33		
Eleventh month.....	204	3	41		126		37	3	
Twelfth month.....	229	2	36	1	150		43	1	
Employed at home during infant's life—									
Second month.....	55		47		2		6		
Third month.....	65		52		5		8		
Fourth month.....	73		54		10		9		
Fifth month.....	78		54		12		12		
Sixth month.....	81	1	52		14		15	1	
Seventh month.....	82		40		37		15		
Eighth month.....	89	2	42	1	33		15	1	
Ninth month.....	90	1	33	1	42		15		
Tenth month.....	91		25		49		17		
Eleventh month.....	98	2	22		57		19	2	
Twelfth month.....	103	1	20	1	61		22		
Employed away from home during infant's life—									
Second month.....	11		7		1		3		
Third month.....	20	1	11		5		4	1	
Fourth month.....	26		14		8		4		
Fifth month.....	47	1	23		15	1	9		
Sixth month.....	54	3	26		17	1	11	2	
Seventh month.....	64	5	23	1	28	1	13	3	
Eighth month.....	72	1	24		37	1	11		
Ninth month.....	80	1	17		62		11	1	
Tenth month.....	95		18		61		16		
Eleventh month.....	108	1	19		69		18	1	
Twelfth month.....	126	1	16		89		21	1	
Italian mothers employed during infant's life—									
Second month.....	76		68		6		2		
Third month.....	111	1	90	1	12		9		
Fourth month.....	126	1	92		16		18	1	
Fifth month.....	141		97		26		19		
Sixth month.....	149	1	96	1	29		24		
Seventh month.....	151		78		47		28		
Eighth month.....	159	1	64		58		37	1	
Ninth month.....	159	1	54		66		39	1	
Tenth month.....	159		45		72		42		
Eleventh month.....	161	2	35		63		43	2	
Twelfth month.....	163		31		84		48		
Employed at home during infant's life—									
Second month.....	74		66		6		2		
Third month.....	108	1	87	1	12		9		
Fourth month.....	122	1	90		14		18	1	
Fifth month.....	136		95		22		19		
Sixth month.....	144	1	94	1	26		24		
Seventh month.....	146		75		43		28		
Eighth month.....	153	1	62		54		37	1	
Ninth month.....	153	1	52		62		39	1	
Tenth month.....	153		43		68		42		
Eleventh month.....	155	2	34		78		43	2	
Twelfth month.....	156		30		80		46		

TABLE 116.—*Infant survivors and infant deaths, by type of feeding, month of life, place of mother's employment, and color and nationality of mother; infants of mothers employed during infant's lifetime—Continued.*

Month of life of infant, and place of employment, color, and nationality of mother.	Infants of mothers employed during infant's lifetime.								
	Total.		Breast fed.		Mixed fed.		Artificially fed.		Not reported.
	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.	Deaths in month.	Infant survivors.
Italian mothers employed during infant's life—Con.									
Employed away from home during infant's life—									
Second month.....	2		2						
Third month.....	3		3						
Fourth month.....	4		2		2				
Fifth month.....	5		2		3				
Sixth month.....	5		2		3				
Seventh month.....	5		1		4				
Eighth month.....	6		2		4				
Ninth month.....	6		2		4				
Tenth month.....	6		2		4				
Eleventh month.....	6		1		5				
Twelfth month.....	7		1		4		2		
All other foreign-born white mothers employed during infant's life—									
Employed away from home during infant's life—									
Second month.....	108	2	81	1	7		20	1	
Third month.....	142		93		15		34		
Fourth month.....	161		94		23		44		
Fifth month.....	176	1	91		29		56	1	
Sixth month.....	181	3	81		39	1	61	2	
Seventh month.....	186	1	68		50		68	1	
Eighth month.....	195	2	59		63		73	2	
Ninth month.....	202	1	45		78		79	1	
Tenth month.....	206	2	31		90		87	2	
Eleventh month.....	210		22		95		93		
Twelfth month.....	212	1	20		95		97	1	
Employed at home during infant's life—									
Second month.....	103	2	77	1	6		20	1	
Third month.....	129		86		12		31		
Fourth month.....	145		86		20		39		
Fifth month.....	155	1	81		26		48	1	
Sixth month.....	159	3	74		35	1	50	2	
Seventh month.....	160	1	62		43		55	1	
Eighth month.....	167	2	57		51		59	2	
Ninth month.....	170	1	43		63		64	1	
Tenth month.....	173	1	29		74		70	1	
Eleventh month.....	175		20		79		76		
Twelfth month.....	176	1	18		79		79	1	
Employed away from home during infant's life—									
Second month.....	5		4		1				
Third month.....	13		7		3		3		
Fourth month.....	16		8		3		5		
Fifth month.....	21		10		3		8		
Sixth month.....	22		7		4		11		
Seventh month.....	26		6		7		13		
Eighth month.....	28		2		12		14		
Ninth month.....	32		2		15		15		
Tenth month.....	35		2		16		17		
Eleventh month.....	35		2		16		17		
Twelfth month.....	36		2		16		18		
Colored mothers employed during infant's life—									
Second month.....	69	1	40		13		16	1	
Third month.....	254	2	114		80	1	60	1	
Fourth month.....	373	6	158	1	130	2	95	3	
Fifth month.....	483	5	175	1	182	1	128	3	
Sixth month.....	535	10	183	2	208	1	144	4	
Seventh month.....	575	7	131		267	3	175	4	
Eighth month.....	622	6	111		313	1	198	5	
Ninth month.....	645	3	80		347	1	218	2	

TABLE 118.—*Infant mortality rates, by time of mother's employment away from home, color and nativity of mother, and earnings of father; live births, all pregnancies.*

Earnings of father during year after 1915, birth and color and nativity of mother.	Live births, all pregnancies.								
	Mother never employed away. ¹			Mother employed away before marriage only.			Mother employed away after marriage.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²
All mothers.....	8,181	812	99.3	17,491	1,825	104.3	9,172	1,521	165.9
Earnings of father:									
Under \$550.....	2,053	240	116.9	3,616	438	121.1	4,919	871	177.1
\$550-\$949.....	2,535	271	106.9	7,106	785	110.5	2,855	448	156.9
\$950-\$1,849.....	2,631	223	84.8	5,871	534	90.9	743	91	122.5
\$1,850 and over.....	589	28	47.5	498	31	62.2	47	2	.....
No earnings.....	153	19	124.2	133	13	97.7	397	75	188.9
Not reported.....	220	31	140.9	267	24	89.9	211	34	161.1
Native white mothers..	4,603	452	98.2	12,143	1,271	140.7	2,960	462	156.6
Earnings of father:									
Under \$550.....	596	74	124.2	1,744	229	131.3	1,152	183	158.9
\$550-\$949.....	1,363	158	115.9	5,217	596	114.2	1,171	182	155.4
\$950-\$1,849.....	1,979	170	86.9	4,538	395	87.0	398	53	133.2
\$1,850 and over.....	482	27	56.0	397	26	65.5	13	1	.....
No earnings.....	60	7	.....	65	10	.....	134	30	223.9
Not reported.....	123	16	130.0	182	15	82.4	82	13	.....
Foreign-born white mothers.....	3,291	323	98.2	4,423	435	96.3	3,080	464	153.1
Earnings of father:									
Under \$550.....	1,316	148	112.5	1,293	133	102.9	1,615	266	165.9
\$550-\$949.....	1,078	106	98.3	1,645	187	95.4	1,083	149	144.4
\$950-\$1,849.....	615	45	73.2	1,256	130	103.5	260	27	103.6
\$1,850 and over.....	107	1	9.3	96	5	.....	34	1	.....
No earnings.....	88	12	.....	61	2	.....	66	11	.....
Not reported.....	87	11	.....	70	8	.....	23	8	.....
Colored mothers.....	287	37	128.9	925	119	128.6	3,192	595	186.4
Earnings of father:									
Under \$550.....	141	18	127.7	579	76	131.3	2,162	420	195.2
\$550-\$949.....	94	7	.....	244	32	131.1	652	117	179.4
\$950-\$1,849.....	37	8	.....	77	9	.....	85	11	.....
\$1,850 and over.....	.....	.....	.....	3	.....	.....	.....	.....	.....
No earnings.....	5	.....	.....	7	1	.....	197	34	172.6
Not reported.....	10	4	.....	15	1	.....	106	13	122.6

¹ Includes 12 for whom employment was not reported.² Not shown where base is less than 100.

APPENDIX VII.—TABLES.

TABLE 119.—Stillbirth rates, by time of mother's employment away from home, color and nativity of mother, and earnings of father; births, all pregnancies.

Earnings of father during year after 1915 birth and color and nativity of mother.	Births, all pregnancies.								
	Mother never employed away. ¹			Mother employed away before marriage only.			Mother employed away after marriage.		
	Births.	Stillbirths.		Births.	Stillbirths.		Births.	Stillbirths.	
		Number.	Per 1,000 births. ²		Number.	Per 1,000 births. ²		Number.	Per 1,000 births. ²
All mothers.....	8,443	262	31.0	17,978	497	27.1	9,626	454	47.2
Earnings of father:									
Under \$450.....	1,187	33	27.8	1,651	58	35.1	3,164	160	50.6
\$450-\$549.....	940	41	43.6	2,085	62	29.7	2,025	110	54.3
\$550-\$649.....	952	29	30.5	2,614	65	24.9	1,557	54	34.7
\$650-\$749.....	1,644	32	19.5	4,681	124	26.5	1,410	58	41.1
\$750-\$1,349.....	2,716	85	31.3	6,024	153	25.4	1,777	34	43.8
\$1,350 and over.....	613	24	39.2	511	13	25.4	48	1	.....
No earnings.....	163	10	61.3	135	2	14.8	425	28	65.9
Not reported.....	228	8	35.1	277	10	36.1	220	9	40.9
Native white mothers.....	4,750	147	30.9	12,453	310	24.9	3,055	105	34.4
Earnings of father:									
Under \$450.....	242	7	28.9	640	14	21.9	670	19	28.4
\$450-\$549.....	374	13	34.8	1,146	28	24.4	519	18	34.7
\$550-\$649.....	508	10	19.7	1,779	38	21.4	571	22	38.5
\$650-\$749.....	879	14	15.9	3,571	95	26.6	644	22	31.2
\$750-\$1,349.....	2,052	73	35.6	4,655	117	25.1	414	16	38.6
\$1,350 and over.....	502	20	39.8	407	10	24.6	13	.....	.....
No earnings.....	66	6	.....	67	2	.....	141	7	49.6
Not reported.....	127	4	31.5	198	6	31.9	83	1	.....
Foreign-born white mothers.....	3,378	87	25.8	4,542	119	26.2	3,134	104	33.2
Earnings of father:									
Under \$450.....	858	13	15.2	696	17	24.8	1,017	31	30.5
\$450-\$549.....	491	20	40.7	642	18	28.0	653	24	36.8
\$550-\$649.....	421	16	38.0	696	18	25.9	584	12	20.5
\$650-\$749.....	690	17	24.6	993	26	26.2	477	17	35.6
\$750-\$1,349.....	624	9	14.4	1,289	33	25.6	272	12	44.1
\$1,350 and over.....	111	4	36.0	101	3	29.7	35	1	.....
No earnings.....	92	4	.....	61	.....	.....	72	6	.....
Not reported.....	91	4	.....	74	4	.....	24	1	.....
Colored mothers.....	315	28	88.9	983	58	59.0	3,437	245	71.3
Earnings of father:									
Under \$450.....	87	13	.....	325	27	83.1	1,477	110	74.5
\$450-\$549.....	75	8	.....	297	16	53.9	853	68	79.7
\$550-\$649.....	23	3	.....	139	9	64.7	402	20	49.8
\$650 and over.....	115	4	34.8	200	6	30.0	380	25	65.8
No earnings.....	5	.....	.....	7	.....	.....	212	15	70.8
Not reported.....	10	.....	.....	15	.....	.....	113	7	61.9

¹ Includes 12 for whom employment was not reported.
² Not shown where base is less than 100.

INFANT MORTALITY, BALTIMORE, MD.

TABLE 120.—*Infant mortality rates, by number of births¹ to mother, her employment away from home, and color and nativity; live births, all pregnancies.*

Employment away from home, and color and nativity of mother.	Live births, all pregnancies, to mothers having specified number of births.								
	1-3.			4-6.			7 and over.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Num-ber.	Infant mor-tality rate. ²		Num-ber.	Infant mor-tality rate. ²		Num-ber.	Infant mor-tality rate. ²
All mothers.....	11,500	1,106	95.4	11,464	1,239	108.1	11,790	1,813	153.9
Not employed.....	2,269	167	73.9	2,865	247	86.2	3,045	306	120.0
Employed before marriage only.....	7,135	599	84.0	5,704	590	103.4	4,652	636	136.7
Employed after marriage.....	2,190	338	154.3	2,889	402	139.1	4,093	781	190.9
Employment not reported.....	6	2		6					
Native white mothers.....	7,888	721	91.4	6,395	699	107.7	5,413	775	143.2
Not employed.....	1,652	113	68.4	1,582	154	97.3	1,360	185	126.0
Employed before marriage only.....	5,278	457	86.6	3,909	405	103.6	2,956	409	136.4
Employed after marriage.....	965	151	158.1	898	130	144.8	1,097	181	165.0
Employment not reported.....	8			6					
Foreign-born white mothers.....	2,624	237	90.3	3,677	356	96.8	4,443	629	141.6
Not employed.....	499	43	86.2	1,209	88	72.8	1,582	191	120.7
Employed before marriage only.....	1,517	109	71.9	1,465	139	94.9	1,441	167	129.8
Employed after marriage.....	607	84	138.4	1,003	129	128.6	1,420	251	176.8
Employment not reported.....	1	1							
Colored mothers.....	1,078	148	137.3	1,392	194	139.4	1,934	409	211.5
Not employed.....	108	11	101.9	74	5		103	20	194.2
Employed before marriage only.....	340	33	97.1	330	46	139.4	255	40	156.9
Employed after marriage.....	628	103	164.0	988	143	144.7	1,576	349	221.4
Employment not reported.....	2	1							

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 121.—*Infant mortality rates (by cause of death) and stillbirth rates, by employment of mother away from home, during pregnancy and after birth, and by color and nativity of mother; births in 1915.*

Employment away from home, and color and nativity of mother.	Total births.	Stillbirths.		Live births.	Infant deaths.			
		Num-ber.	Per 1,000 births. ¹		Early infancy.		All other causes.	
					Num-ber.	Infant mortal-ity rate. ¹	Num-ber.	Infant mortal-ity rate. ¹
All mothers.....	11, 195	398	35. 6	10, 797	407	37. 7	710	65. 8
Not employed.....	2, 356	72	30. 6	2, 284	73	32. 0	123	53. 9
Employed before birth in 1915:								
Before marriage only.....	6, 347	193	30. 4	6, 154	220	35. 7	346	56. 2
After marriage and prior to but not during pregnancy of 1915.....	1, 144	43	37. 6	1, 101	43	39. 1	84	76. 3
During pregnancy of 1915.....	1, 317	88	66. 8	1, 229	70	57. 0	151	122. 9
Employed only after birth in 1915.....	24	2	.....	22	.....	.....	5	.....
Employment not reported.....	7	.....	.....	7	1	.....	1	.....
Native white mothers.....	6, 937	198	28. 5	6, 739	257	38. 1	389	57. 7
Not employed.....	1, 512	43	28. 4	1, 469	48	32. 7	72	49. 0
Employed before birth in 1915:								
Before marriage only.....	4, 585	127	27. 7	4, 458	168	37. 7	250	56. 1
After marriage and prior to but not during pregnancy of 1915.....	463	10	21. 6	453	25	55. 2	31	68. 4
During pregnancy of 1915.....	366	18	49. 2	348	16	46. 0	33	94. 8
Employed only after birth in 1915.....	7	.....	.....	7	.....	.....	3	.....
Employment not reported.....	4	.....	.....	4	.....	.....	.....	.....
Foreign-born white mothers.....	2, 837	84	29. 6	2, 753	85	30. 9	179	65. 0
Not employed.....	735	18	24. 5	717	19	26. 5	45	62. 8
Employed before birth in 1915:								
Before marriage only.....	1, 386	43	31. 0	1, 343	36	26. 8	67	49. 8
After marriage and prior to but not during pregnancy of 1915.....	387	10	25. 8	377	10	26. 5	28	74. 3
During pregnancy of 1915.....	322	11	34. 2	311	20	64. 3	37	119. 0
Employed only after birth in 1915.....	6	2	.....	4	.....	.....	1	.....
Employment not reported.....	1	.....	.....	1	.....	.....	1	.....
Colored mothers.....	1, 421	116	81. 6	1, 305	65	49. 8	142	108. 8
Not employed.....	109	11	100. 9	98	6	.....	6	.....
Employed before birth in 1915:								
Before marriage only.....	376	23	61. 2	353	16	45. 3	29	82. 2
After marriage and prior to but not during pregnancy of 1915.....	294	23	78. 2	271	8	29. 5	25	92. 3
During pregnancy of 1915.....	629	59	93. 8	570	34	59. 0	81	142. 1
Employed only after birth in 1915.....	11	.....	.....	11	.....	.....	1	.....
Employment not reported.....	2	.....	.....	2	1	.....	.....	.....

¹ Not shown where base is less than 100.

INFANT MORTALITY, BALTIMORE, MD.

TABLE 122.—*Excess mortality among infants of mothers employed away from home, by time of mother's employment, over mortality expected when effect of differences in number of births¹ to mother, color and nativity of mother, and earnings of father are eliminated; live births, all pregnancies.*

Employment of mother away from home before and after marriage.	Live births, all pregnancies.				
	Live births. ²	Actual deaths.		Expected deaths. ³	
		Number.	Infant mortality rate.	Number.	Infant mortality rate.
Total.....	33,463	3,962	118.4	3,960.9	118.4
Not employed after marriage.....	24,892	2,550	102.4	2,740.7	110.1
Never employed.....	7,801	762	97.7	869.5	111.5
Employed before marriage only.....	17,091	1,788	104.6	1,871.2	109.5
Employed after marriage.....	8,564	1,412	164.9	1,220.2	142.5
Employment not reported.....	7				

¹ Includes miscarriages.

² The 1,381 live births and 196 actual deaths in families where fathers earned nothing or the amounts were not reported are omitted from the computation.

³ Expected deaths are calculated by applying to the live births in each mother's employment, color and nativity, number of issues, and father's earnings group the rates prevailing among all infants (irrespective of mother's employment) in the same color and nativity, number of issues, and father's earnings group.

TABLE 123.—Employment of mother away from home, by age of mother when she began work, and color and nativity; births (all pregnancies) to mothers employed away from home at some time prior to birth in 1915.

Employment away from home and color and nativity of mother.	Total births.		Births, all pregnancies, to mothers who began work away from home at specified age.			
	Number.	Per cent distribution.	Under 14.		14-15.	
			Number.	Per cent distribution.	Number.	Per cent distribution.
All mothers.....	27,604	100.0	9,319	100.0	8,002	100.0
Employment away from home:						
Before marriage only.....	17,978	65.1	5,518	59.2	5,618	70.2
After marriage.....	9,626	34.9	3,801	40.8	2,384	29.8
Native white mothers.....	15,508	56.2	5,160	55.4	4,949	61.8
Employment away from home:						
Before marriage only.....	12,453	45.1	3,805	40.8	4,112	51.4
After marriage.....	3,065	11.1	1,355	14.5	837	10.5
Foreign-born white mothers.....	7,676	27.8	2,270	24.4	1,985	24.8
Employment away from home:						
Before marriage only.....	4,542	16.5	1,397	15.0	1,268	15.8
After marriage.....	3,134	11.4	873	9.4	717	9.0
Colored mothers.....	4,420	16.0	1,889	20.3	1,068	13.3
Employment away from home:						
Before marriage only.....	983	3.6	316	3.4	238	3.0
After marriage.....	3,437	12.5	1,573	16.9	830	10.4

Employment away from home and color and nativity of mother.	Births, all pregnancies, to mothers who began work away from home at specified age.						
	16-19.		20-24.		25 and over.		Not reported.
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.	
All mothers.....	7,788	100.0	1,543	100.0	739	100.0	223
Employment away from home:							
Before marriage only.....	5,810	74.6	848	55.0	66	9.1	118
After marriage.....	1,978	25.4	695	45.0	663	90.9	105
Native white mothers.....	4,367	56.1	715	46.3	227	31.1	90
Employment away from home:							
Before marriage only.....	3,889	49.9	561	36.4	33	4.5	53
After marriage.....	478	6.1	154	10.0	194	26.0	37
Foreign-born white mothers.....	2,244	28.8	672	43.6	440	60.4	65
Employment away from home:							
Before marriage only.....	1,549	19.9	255	16.5	33	4.5	40
After marriage.....	606	7.9	417	27.0	407	55.8	25
Colored mothers.....	1,177	15.1	156	10.1	62	8.5	68
Employment away from home:							
Before marriage only.....	372	4.8	32	2.1	.....	.....	25
After marriage.....	805	10.3	124	8.0	62	8.5	43

TABLE 124.—*Employment of mother during pregnancy of 1915, by place of employment, age when she began work away from home, and color and nativity; births in 1915 to mothers employed away from home at some time prior to the birth.*

Place of employment during pregnancy of 1915, and color and nativity of mother.	Total births.		Births in 1915 to mothers who began work away from home at specified age.			
	Number.	Per cent. distribution.	Under 14.		14-15.	
			Number.	Per cent. distribution.	Number.	Per cent. distribution.
All mothers.....	8,809	100.0	2,530	100.0	2,635	100.0
Not employed.....	6,192	70.3	1,595	63.0	1,919	72.6
Employed at home.....	1,290	14.7	436	17.2	350	13.6
Employed away from home.....	1,317	15.0	499	19.7	357	13.5
Employment not reported.....	1					
Native white mothers.....	5,415	100.0	1,501	100.0	1,782	100.0
Not employed.....	4,542	83.9	1,170	77.9	1,481	84.5
Employed at home.....	506	9.3	174	11.6	166	8.9
Employed away from home.....	366	6.8	157	10.5	115	6.6
Employment not reported.....	1					
Foreign-born white mothers.....	2,095	100.0	540	100.0	527	100.0
Not employed.....	1,304	62.2	335	62.0	354	67.2
Employed at home.....	460	22.4	123	22.8	115	21.8
Employed away from home.....	322	15.4	82	15.2	58	11.0
Colored mothers.....	1,290	100.0	489	100.0	356	100.0
Not employed.....	346	26.6	90	18.4	84	23.6
Employed at home.....	324	24.9	130	28.4	88	24.7
Employed away from home.....	620	48.4	260	53.2	184	51.7

Place of employment during pregnancy of 1915, and color and nativity of mother.	Births in 1915 to mothers who began work away from home at specified age.						
	16-19.		20-24.		25 and over.		Not reported.
	Number.	Per cent. distribution.	Number.	Per cent. distribution. ¹	Number.	Per cent. distribution. ¹	
All mothers.....	2,886	100.0	559	100.0	144	100.0	55
Not employed.....	2,177	75.4	396	70.8	72	50.0	33
Employed at home.....	386	13.4	86	15.4	20	13.9	12
Employed away from home.....	323	11.2	77	13.8	52	36.1	9
Employment not reported.....							1
Native white mothers.....	1,777	100.0	301	100.0	60	100.0	24
Not employed.....	1,573	88.5	269	89.0	40		19
Employed at home.....	188	7.8	27	9.0	8		3
Employed away from home.....	66	3.7	15	5.0	12		1
Employment not reported.....							1
Foreign-born white mothers.....	780	100.0	206	100.0	78	100.0	14
Not employed.....	461	63.2	114	55.3	31		9
Employed at home.....	168	23.0	48	23.3	11		4
Employed away from home.....	101	13.8	44	21.4	36		1
Colored mothers.....	379	100.0	52	100.0	6	100.0	17
Not employed.....	143	37.7	23		1		5
Employed at home.....	80	21.1	11		1		5
Employed away from home.....	156	41.2	18		4		7

¹ Not shown where base is less than 100.

TABLE 125.—*Excess mortality and stillbirth rates among infants of mothers employed away from home, by age of mother when she began work, over average rates after effect of differences of color and nativity is eliminated; births, all pregnancies.*

Age at which mother began work away from home.	Births, all pregnancies.				
	Total.	Stillbirth rates per 1,000 births.		Infant mortality per 1,000 live births.	
		Actual.	Ex-pected. ¹	Actual.	Ex-pected. ¹
Under 14.....	9,319	36.1	35.8	139.6	127.7
14-15.....	8,002	34.5	32.9	122.6	123.7
16-19.....	7,788	30.3	33.8	106.9	125.0
20-24.....	1,543	29.8	32.0	127.6	123.2
25 and over.....	729	41.2	31.8	161.7	123.3

¹ To find expected rates, the births in each group of births to mothers employed, classified by color and nativity and by mother's age at beginning work, are multiplied by the rates prevailing among all infants in each color and nativity group; the sum of the deaths (or stillbirths) in each age of mother group is then divided by the births in that group.

TABLE 126.—*Excess mortality (by cause of death) and stillbirth rates among infants of mothers employed away from home, by age of mother when she began work, over average rates after effect of differences of color and nativity is eliminated; births in 1915.*

Age at which mother began work away from home.	Births in 1915.						
	Total.	Stillbirth rates per 1,000 births.		Infant mortality per 1,000 live births.			
		Actual.	Ex-pected. ¹	Early infancy.		All other causes.	
				Actual.	Ex-pected. ¹	Actual.	Ex-pected. ¹
Under 14.....	2,530	40.7	39.1	38.3	39.8	75.8	70.6
14-15.....	2,635	41.4	36.1	38.0	39.4	72.8	67.5
16-19.....	2,846	31.5	36.0	41.1	39.0	54.7	67.8
20-24.....	559	19.7	34.3	31.0	38.0	74.8	66.8
25 and over.....	144	34.7	27.1	57.6	33.1	64.7	60.4

¹ To find expected rates, the births in each group of births to mothers employed, classified by color and nativity and by mother's age at beginning work, are multiplied by the rates prevailing among all infants in each color and nativity group; the sum of the deaths (or stillbirths) in each age of mother group is then divided by the births in that group.

TABLE 127.—*Infant mortality rates, by literacy of mother, earnings of father, and color and nationality of mother; live births in 1915.*

Earnings of father and color and nationality of mother.	Literate mothers.			Illiterate mothers.		
	Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹
All mothers.....	9,746	979	100.5	1,041	136	130.6
Earnings of father:						
Under \$450.....	1,193	192	160.9	349	50	143.3
\$450-\$549.....	1,206	145	120.2	241	26	107.9
\$550-\$649.....	1,314	140	106.6	174	22	126.4
\$650-\$849.....	2,273	220	96.8	144	12	83.3
\$850-\$1,249.....	2,186	152	69.5	69	6	.....
\$1,250-\$1,849.....	773	61	78.9	17	2	.....
\$1,850 and over.....	428	16	37.4	3	.....	.....
No earnings.....	177	30	169.5	30	13	.....
Not reported.....	196	23	117.3	14	5	.....
Native white mothers.....	6,610	622	94.1	127	24	189.0
Earnings of father:						
Under \$450.....	421	68	161.5	27	6	.....
\$450-\$549.....	611	75	122.7	33	8	.....
\$550-\$649.....	883	93	105.3	25	5	.....
\$650-\$849.....	1,699	163	95.9	27	2	.....
\$850-\$1,249.....	1,790	125	69.8	11	1	.....
\$1,250 and over.....	993	66	66.5	2	1	.....
No earnings.....	88	16	.....	.....	.....	.....
Not reported.....	125	16	128.0	2	1	.....
Foreign-born white mothers.....	1,987	174	87.6	761	89	117.0
Earnings of father:						
Under \$650.....	912	94	103.1	551	62	112.5
Under \$450.....	333	48	144.1	254	37	145.7
\$450-\$549.....	278	18	64.7	170	10	58.8
\$550-\$649.....	301	28	93.0	127	15	118.1
\$650 and over.....	1,014	73	72.0	177	14	79.1
\$650-\$849.....	466	45	96.6	104	8	76.9
\$850 and over.....	548	28	51.1	73	6	.....
No earnings.....	26	3	.....	24	10	.....
Not reported.....	35	4	.....	9	3	.....
Jewish.....	791	37	46.8	169	12	71.0
Earnings of father:						
Under \$650.....	337	18	53.4	108	4	37.0
\$650 and over.....	421	15	35.6	48	4	.....
No earnings.....	17	1	.....	10	3	.....
Not reported.....	16	3	.....	3	1	.....
Polish.....	339	59	174.0	285	42	147.4
Earnings of father:						
Under \$650.....	219	37	168.9	224	34	151.8
\$650 and over.....	111	21	189.2	52	4	.....
No earnings.....	3	1	.....	7	3	.....
Not reported.....	6	.....	.....	2	1	.....
Italian.....	220	16	72.7	190	20	105.3
Earnings of father:						
Under \$650.....	114	12	105.3	141	15	106.4
\$650 and over.....	100	3	30.0	44	4	.....
No earnings.....	2	1	.....	2	.....	.....
Not reported.....	4	.....	.....	3	1	.....
All other.....	637	62	97.3	117	15	128.2
Earnings of father:						
Under \$650.....	242	27	111.6	78	9	.....
\$650 and over.....	382	34	89.0	33	2	.....
No earnings.....	4	.....	.....	5	4	.....
Not reported.....	9	1	.....	1	.....	.....
Colored mothers.....	1,149	183	159.3	153	23	150.3
Earnings of father:						
Under \$550.....	756	128	169.3	106	15	141.5
\$550 and over.....	294	41	139.5	38	4	.....
No earnings.....	63	11	.....	6	3	.....
Not reported.....	36	3	.....	3	1	.....

¹ Not shown where base is less than 100.

TABLE 128.—*Relative mortality among infants of illiterate mothers when effect of differences in mother's color and nationality and father's earnings is eliminated; births in 1915 to illiterate mothers.*

Color and nationality of mother.	Deaths among infants of illiterate mothers.	
	Actual. ¹	Expected. ²
Total.....	118	119.9
Native white mothers.....	23	14.9
Jewish mothers.....	8	7.2
Polish mothers.....	38	44.4
Italian mothers.....	19	18.0
All other foreign-born white mothers.....	11	12.9
Colored mothers.....	19	22.5

¹ The 44 live births and 18 actual deaths in families where the father's earnings were "none" or "not reported" are omitted in this computation.

² Expected deaths in each nationality group are the sum of the deaths found by multiplying the births (for illiterate mothers) classified by father's earnings by the rates prevailing among all infants in the corresponding nationality and earnings groups.

TABLE 129.—*Infant mortality rates, by mother's ability to speak English, earnings of father, and nationality of mother; live births in 1915 to foreign-born white mothers of non-English-speaking nationalities.*

Earnings of father and nationality of mother.	Live births to foreign-born white mothers of non-English-speaking nationalities.					
	Mother able to speak English.			Mother not able to speak English.		
	Live births.	Infant deaths.		Live births.	Infant deaths.	
Number.		Infant mortality rate. ¹	Number.		Infant mortality rate. ¹	
Foreign-born white mothers of non-English-speaking nationalities.....	1,594	125	78.4	1,027	124	120.7
Earnings of father:						
Under \$650.....	711	60	81.4	712	91	127.8
Under \$430.....	244	30	123.0	334	53	158.7
\$450-\$649.....	235	12	51.1	109	15	75.4
\$550-\$649.....	232	18	77.6	179	23	128.5
\$650 and over.....	825	57	69.1	279	21	75.3
\$650-\$949.....	363	33	90.9	171	13	76.0
\$950 and over.....	462	24	51.9	108	8	74.1
No earnings.....	27	3	.....	22	10	.....
Not reported.....	31	5	.....	14	2	.....
Jewish.....	786	39	49.6	175	10	57.1
Earnings of father:						
Under \$650.....	336	18	53.6	110	4	36.4
\$650 and over.....	14	16	38.6	55	3	.....
No earnings.....	19	1	.....	8	3	.....
Not reported.....	17	4	.....	2	.....	.....
Polish.....	223	39	174.9	402	63	156.7
Earnings of father:						
Under \$650.....	144	23	159.7	299	48	160.5
\$650 and over.....	72	15	.....	91	10	.....
No earnings.....	3	.....	.....	7	4	.....
Not reported.....	4	1	.....	5	1	.....
Italian.....	140	11	78.6	272	25	91.9
Earnings of father:						
Under \$650.....	72	7	.....	184	20	108.7
\$650 and over.....	66	4	.....	78	3	.....
No earnings.....	.....	.....	.....	4	1	.....
Not reported.....	2	.....	.....	6	1	.....
All other.....	170	14	82.4	132	18	136.4
Earnings of father:						
Under \$650.....	63	4	.....	91	11	.....
\$650 and over.....	100	9	90.0	37	5	.....
No earnings.....	2	1	.....	3	2	.....
Not reported.....	5	.....	.....	1	.....	.....

¹ Not shown where base is less than 100.

TABLE 130.—*Relative mortality among infants of mothers not able to speak English, as compared with mortality expected on the basis of average rates, when effect of difference in mother's color and nationality and father's earnings is eliminated; live births in 1915 to foreign-born white mothers unable to speak English.*

Nationality of mother.	Deaths among infants of foreign-born white mothers unable to speak English. ¹	
	Actual. ²	Expected. ¹
Total.....	112	113.4
Jewish.....	7	8.1
Polish.....	58	62.8
Italian.....	23	21.9
All other.....	24	18.4

¹ Actual and expected deaths in families where the father's earnings were "none" or "not reported" are omitted.

² The expected deaths in each nationality group are the sum of the deaths found by multiplying the births (to mothers unable to speak English) classified by father's earnings by the mortality rates for all infants in the corresponding nationality and earnings group.

TABLE 131.—*Prevalence of infant-welfare work, by ability of mother to speak English and nationality; infants born to Jewish, Polish, and Italian mothers and surviving two weeks.*

Ability to speak English and nationality of mother.	Total infants surviving two weeks.	Infants surviving 2 weeks and having specified postnatal care (institutional).			
		Care graded as better than poor.		No care.	
		Number.	Per cent.	Number.	Per cent.
Jewish:					
Able to speak English.....	768	177	23.0	439	57.2
Not able to speak English.....	169	53	31.4	75	44.4
Italian:					
Able to speak English.....	134	30	22.4	84	62.7
Not able to speak English.....	262	24	9.2	184	70.2
Polish:					
Able to speak English.....	210	14	6.7	156	74.3
Not able to speak English.....	388	20	5.2	308	79.4

TABLE 132.—*Infant mortality and stillbirth rates, by order of birth; births in 1915, and births, all pregnancies.*

Order of birth. ¹	Births in 1915.					Births, all pregnancies.						
	Births.	Stillbirths.		Live births.	Infant deaths.		Births.	Stillbirths.		Live births.	Infant deaths.	
		Number.	Per 1,000 births.		Number.	Infant mortality rate.		Number.	Per 1,000 births.		Number.	Infant mortality rate.
Total.....	11,195	396	35.6	10,797	1,117	103.5	36,047	1,203	33.4	34,844	4,158	119.3
First.....	2,999	131	43.7	2,868	272	94.8	10,754	427	39.7	10,327	1,196	115.8
Second.....	2,471	62	25.1	2,409	223	92.6	7,698	198	25.7	7,500	770	102.7
Third.....	1,825	44	28.9	1,481	136	91.8	5,279	149	28.2	5,130	572	111.5
Fourth.....	1,164	37	31.8	1,127	120	106.5	3,812	111	29.1	3,701	470	127.0
Fifth and sixth.....	1,503	54	35.9	1,449	157	108.4	4,684	156	33.3	4,528	591	130.5
Seventh to ninth.....	1,058	42	39.7	1,016	129	127.0	2,884	109	37.8	2,775	395	142.3
Tenth and later.....	475	28	58.9	447	80	179.0	936	53	56.6	883	164	185.7

¹“Order of birth” means order of issue for births in 1915 and order of pregnancy for births, all pregnancies.

TABLE 133.—*Infant mortality and stillbirth rates, by order of birth and color of mother; single births in 1915, and single births, all pregnancies, to mothers who reported no plural births.*

Order of birth ¹ and color of mother.	Single births in 1915.					Births, all pregnancies to mothers who reported no plural births.						
	Births.	Stillbirths.		Live births.	Infant deaths.		Births.	Stillbirths.		Live births.	Infant deaths.	
		Number.	Per 1,000 births.		Number.	Infant mortality rate.		Number.	Per 1,000 births.		Number.	Infant mortality rate.
All mothers.....	10,915	378	34.6	10,537	1,023	97.1	33,612	1,089	32.4	32,523	3,671	112.9
Order of birth:												
First.....	2,956	126	42.6	2,830	259	91.1	10,330	398	38.5	9,932	1,114	112.2
Second and third....	3,910	103	26.3	3,807	334	87.7	12,246	322	26.3	11,924	1,208	101.3
Fourth to sixth.....	2,570	84	32.7	2,486	241	96.9	7,740	234	30.2	7,506	900	119.9
Seventh to ninth....	1,032	42	40.7	990	120	121.2	2,531	92	36.3	2,439	323	132.4
Tenth and later.....	447	23	51.5	424	69	162.7	765	43	56.2	722	126	174.5
White mothers.....	9,529	269	28.2	9,260	834	90.1	29,205	783	26.8	28,422	3,000	105.6
Order of birth:												
First.....	2,699	98	36.3	2,601	223	85.7	9,184	304	33.1	8,880	966	108.8
Second and third....	3,443	75	21.8	3,368	268	79.6	10,730	220	20.5	10,510	984	93.6
Fourth to sixth.....	2,189	56	25.6	2,133	193	90.5	6,631	169	25.5	6,462	714	110.5
Seventh to ninth....	852	27	31.7	825	96	116.4	2,079	62	29.8	2,017	244	121.0
Tenth and later.....	346	13	37.6	333	54	162.2	581	28	48.2	553	92	166.4
Colored mothers.....	1,386	109	78.6	1,277	189	148.0	4,407	306	69.4	4,101	671	163.6
Order of birth:												
First.....	257	28	108.9	229	36	157.2	1,146	94	82.0	1,052	148	140.7
Second and third....	467	28	60.0	439	66	150.3	1,516	102	67.3	1,414	224	158.4
Fourth to sixth.....	351	28	73.5	353	48	136.0	1,109	65	58.6	1,044	186	178.2
Seventh to ninth....	180	15	83.3	165	24	145.5	452	30	66.4	422	79	187.2
Tenth and later.....	101	10	99.0	91	15	164.8	184	15	81.5	169	34	201.2

¹“Order of birth” means order of issue for births in 1915 and order of pregnancy for births, all pregnancies.

TABLE 134.—Stillbirth rates, by number of births¹ to mothers, order of pregnancy, and color of mother; single births, all pregnancies, to mothers who reported no plural births.

Order of pregnancy and color of mother. ²	Total.			Single births, all pregnancies, to mothers who reported no plural births and who reported specified number of total births. ¹					
				1-3.			4-6.		
	Births.	Stillbirths.		Births.	Stillbirths.		Births.	Stillbirths.	
		Number.	Per 1,000 births.		Number.	Per 1,000 births.		Number.	Per 1,000 births.
All mothers.....	33,612	1,069	32.4	11,855	408	34.4	11,226	330	29.5
Order of pregnancy:									
First.....	10,330	398	38.5	6,661	271	40.5	2,385	88	36.9
Second.....	7,312	186	25.4	3,750	98	26.1	2,342	63	26.6
Third.....	4,934	126	27.6	1,414	39	27.6	2,316	37	24.6
Fourth to sixth.....	7,740	284	36.2				4,183	122	28.2
Seventh to ninth.....	2,531	92	36.3						
Tenth and later.....	765	43	56.2						
White mothers.....	29,205	783	26.8	10,689	311	29.1	9,802	228	23.3
Order of pregnancy:									
First.....	9,184	304	33.1	6,060	209	34.5	2,083	67	32.3
Second.....	6,438	130	20.2	3,372	71	21.1	2,046	34	16.6
Third.....	4,292	90	21.0	1,257	31	24.7	2,021	38	18.8
Fourth to sixth.....	6,631	169	25.5				3,652	89	24.4
Seventh to ninth.....	2,079	62	29.8						
Tenth and later.....	581	28	48.2						

Order of pregnancy and color of mother. ²	Single births, all pregnancies, to mothers who reported no plural births and who reported specified number of total births. ¹					
	7-9.			10 and over.		
	Births.	Stillbirths.		Births.	Stillbirths.	
		Number.	Per 1,000 births.		Number.	Per 1,000 births.
All mothers.....	6,882	206	29.9	3,649	155	42.5
Order of pregnancy:						
First.....	915	27	29.5	339	12	35.4
Second.....	891	23	25.8	329	12	36.5
Third.....	888	26	29.3	316	14	44.3
Fourth to sixth.....	2,597	82	31.6	980	30	31.3
Seventh to ninth.....	1,591	48	30.2	940	44	46.8
Tenth and later.....				765	43	56.2
White mothers.....	5,900	151	25.6	2,814	98	34.8
Order of pregnancy:						
First.....	781	21	26.9	280	7	24.9
Second.....	768	18	23.6	287	7	27.2
Third.....	766	14	18.3	245	7	28.2
Fourth to sixth.....	2,286	63	28.2	743	17	22.9
Seventh to ninth.....	1,344	35	25.8	725	27	37.3
Tenth and later.....				581	28	48.2

¹ Includes miscarriages.² The figures and rates for infants of colored mothers are not given separately, since the groups are too small to yield satisfactory comparison.

TABLE 135.—*Infant mortality rates, by number of births¹ to mother, order of pregnancy, and color of mother; single live births, all pregnancies, to mothers who reported no plural births.*

Order of pregnancy and color of mother. ²	Total.			Live births, all pregnancies, to mothers who reported no plural births and who reported specified number of total births. ¹					
	Live births.	Infant deaths.		1-3			4-6		
		Number.	Infant mortality rate.	Live births.	Infant deaths.		Live births.	Infant deaths.	
					Number.	Infant mortality rate.		Number.	Infant mortality rate.
All mothers.....	32,523	3,671	112.9	11,447	1,059	92.5	10,906	1,135	104.1
Order of pregnancy:									
First.....	9,932	1,114	112.2	6,420	637	99.2	2,297	283	123.2
Second.....	7,126	696	97.7	3,652	304	83.2	2,289	212	92.6
Third.....	4,798	512	106.7	1,375	118	85.8	2,259	219	96.9
Fourth to sixth.....	7,506	900	119.9				4,061	421	103.7
Seventh to ninth.....	2,439	323	132.4						
Tenth and later.....	722	126	174.5						
White mothers.....	28,422	3,000	105.6	10,378	914	88.1	9,574	957	100.0
Order of pregnancy:									
First.....	8,880	966	108.8	5,851	565	96.6	2,016	246	122.0
Second.....	6,308	571	90.5	3,301	255	77.2	2,012	176	87.5
Third.....	4,202	413	98.3	1,226	94	76.7	1,983	184	92.8
Fourth to sixth.....	6,462	714	110.5				3,563	351	98.5
Seventh to ninth.....	2,017	244	121.0						
Tenth and later.....	553	92	166.4						

Order of pregnancy and color of mother. ²	Live births, all pregnancies, to mothers who reported no plural births and who reported specified number of total births. ¹					
	Live births.	7-9		10 and over.		
		Number.	Infant mortality rate.	Live births.	Infant deaths.	
					Number.	Infant mortality rate.
All mothers.....	6,676	890	133.3	3,494	587	168.0
Order of pregnancy:						
First.....	888	133	149.8	327	61	186.5
Second.....	868	123	141.7	317	57	179.8
Third.....	862	126	146.2	302	49	162.2
Fourth to sixth.....	2,515	319	126.8	930	160	172.0
Seventh to ninth.....	1,543	189	122.5	896	134	149.6
Tenth and later.....				722	126	174.5
White mothers.....	5,749	715	124.4	2,721	414	152.1
Order of pregnancy:						
First.....	760	110	144.7	253	45	177.9
Second.....	745	99	132.9	250	41	164.0
Third.....	732	99	131.6	241	36	149.4
Fourth to sixth.....	2,173	253	116.4	726	110	151.5
Seventh to ninth.....	1,319	154	116.8	698	90	128.9
Tenth and later.....				553	92	166.4

¹ Includes miscarriages

² The figures and rates for infants of colored mothers are not given separately, since the groups are too small to yield satisfactory comparisons.

TABLE 136.—*Excess mortality among infants of mothers reporting large numbers of births¹ over mortality expected at average rates when effect of differences in color and nativity and father's earnings is eliminated; live births, all pregnancies.*

Number of births ¹ to mother.	Live births, all pregnancies.				
	Total.	Actual deaths. ²		Expected deaths. ³	
		Number.	Infant mortality rate.	Number.	Infant mortality rate.
Total.....	33,463	3,962	118.4	3,962.1	118.4
1 to 3.....	11,133	1,038	93.2	1,263.5	113.4
4 to 6.....	10,996	1,182	107.5	1,300.4	118.3
7 to 9.....	7,112	990	139.2	866.4	121.9
10 and over.....	4,217	752	178.3	531.8	128.1

¹ Includes miscarriages.

² Births and actual and expected deaths in families where the earnings of the father were "none" or "not reported" are omitted from this comparison.

³ The expected deaths in each number of issues to mother group are the sum of the deaths found by multiplying the live births (to mothers with specified number of issues), classified by color and nativity of mother and by earnings of father, by the average rates of mortality prevailing among all infants in the corresponding color and nativity and earnings groups.

TABLE 137.—*Infant mortality rates, by order of birth and earnings of father; single live births in 1915 and all live births, all pregnancies.*

Order of birth. ¹	Live births in families where fathers earned specified amount during year after birth in 1915.								
	Under \$550.			\$550-\$849.			\$850 and over.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
Number.		Infant mortality rate.	Number.		Infant mortality rate.	Number.		Infant mortality rate.	
	Single births in 1915.								
Total.....	2,914	380	130.4	3,814	356	93.3	3,363	216	63.7
First.....	632	81	128.2	1,079	92	85.2	1,003	68	67.8
Second.....	578	60	110.4	849	77	90.7	847	47	55.5
Third.....	382	42	109.9	502	45	80.6	495	30	60.6
Fourth.....	328	43	131.1	394	36	91.4	340	20	58.8
Fifth and sixth.....	451	56	124.2	504	44	87.3	372	22	59.1
Seventh to ninth.....	377	62	164.5	347	34	98.0	234	19	81.2
Tenth and later.....	186	27	162.7	139	28	201.4	102	10	98.0
	Births, all pregnancies.								
Total.....	10,583	1,549	146.3	12,496	1,504	120.4	10,379	909	87.6
First.....	2,741	382	139.4	3,795	460	121.2	3,385	295	87.1
Second.....	2,133	284	133.2	2,707	294	108.6	2,366	154	65.1
Third.....	1,563	205	131.2	1,828	207	113.2	1,538	133	86.5
Fourth.....	1,215	187	153.9	1,310	163	124.4	1,029	99	98.2
Fifth and sixth.....	1,562	226	144.7	1,597	214	134.0	1,175	122	108.8
Seventh to ninth.....	1,049	195	185.9	960	115	119.8	665	71	108.8
Tenth and later.....	326	70	214.7	299	51	170.6	221	35	158.4

¹ "Order of birth" means order of issue births in 1915 and order of pregnancy for births, all pregnancies.

TABLE 138.—*Infant mortality rates, by order of birth,¹ earnings of father, and color and nativity of mother; single live births in 1915.*

Earnings of father and color and nativity of mother.	Single live births of specified order of birth. ¹								
	First to third.			Fourth to sixth.			Seventh and later.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²
Native white mothers..	4,567	372	81.5	1,364	128	93.8	641	85	132.6
Earnings of father:									
Under \$550.....	667	84	125.9	235	31	131.9	153	25	163.4
\$550-\$949.....	1,785	145	82.2	557	55	98.7	249	36	144.6
\$950-\$1,249.....	1,247	72	57.7	354	23	65.0	160	19	118.8
\$1,250 and over.....	735	49	66.7	175	12	68.6	62	3	.....
No earnings.....	65	11	.....	15	5	.....	8	.....	.....
Not reported.....	89	11	.....	28	2	.....	9	2	.....
Foreign-born white mothers.....	1,402	119	84.9	769	65	84.5	517	65	125.7
Earnings of father:									
Under \$550.....	491	42	85.5	306	33	107.8	214	34	158.9
\$550-\$949.....	529	50	94.5	270	20	74.1	178	19	106.7
\$950 and over.....	328	17	51.8	171	7	40.9	108	6	55.6
No earnings.....	26	7	.....	11	4	.....	11	2	.....
Not reported.....	28	3	.....	11	1	.....	6	4	.....
Colored mothers.....	668	102	152.7	353	48	136.0	256	39	152.3
Earnings of father:									
Under \$550.....	434	66	152.1	238	35	147.1	176	30	170.5
\$550 and over.....	171	26	152.0	83	5	.....	65	8	.....
No earnings.....	40	7	.....	22	6	.....	7	1	.....
Not reported.....	23	3	.....	10	2	.....	8	.....	.....

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 139.—*Infant mortality rates, by order of birth,¹ earnings of father (detailed groups); single live births in 1915 to native white mothers.*

Earnings of father.	Single live births of specified order of birth. ¹					
	First to sixth.			Seventh and later.		
	Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²
Total.....	5,931	500	84.3	641	85	132.6
Under \$450.....	364	54	148.4	73	13	.....
\$450-\$549.....	538	61	113.4	80	12	.....
\$550-\$649.....	792	72	90.9	94	13	.....
\$650-\$749.....	1,530	128	83.7	155	23	148.4
\$750-\$849.....	1,601	95	59.3	160	19	118.8
\$850-\$1,249.....	569	47	82.6	44	8	.....
\$1,250 and over.....	841	14	41.1	18	.....	.....
No earnings.....	80	16	.....	8	.....	.....
Not reported.....	116	13	112.1	9	2	.....

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 140.—*Premature birth, by order of birth; ¹ live births in 1915.*

Order of birth. ¹	Live births in 1915.			Order of birth. ¹	Live births in 1915.		
	Total.	Premature.			Total.	Premature.	
		Number.	Per cent. ²			Number.	Per cent. ²
Total.....	10,797	591	5.5	Sixth.....	631	28	4.4
First.....	2,868	230	8.0	Seventh.....	440	16	3.6
Second.....	2,409	128	5.3	Eighth.....	337	15	4.5
Third.....	1,481	69	4.7	Ninth.....	239	13	5.4
Fourth.....	1,127	41	3.6	Tenth.....	172	8	4.7
Fifth.....	818	22	2.7	Eleventh.....	90	4	.....
				Twelfth and later..	185	17	9.2

¹ Includes miscarriages.² Not shown where base is less than 100.TABLE 141.—*Premature birth, by interval since preceding birth; ¹ live births in 1915, second and later in order of birth.¹*

Interval since preceding birth. ¹	Live births in 1915, second and later in order of birth. ¹		
	Total.	Premature.	
		Number.	Per cent. ²
Total.....	7,920	361	4.6
1 year.....	2,072	122	6.4
2 years.....	2,950	105	3.6
3 years.....	1,964	50	2.7
4 years and over.....	1,496	69	4.6
Not reported.....	47	5	.....

¹ Includes miscarriages.² Not shown where base is less than 50.TABLE 142.—*Infant mortality (specified causes) and stillbirth rates, by order of birth; ¹ single births in 1915.*

Order of birth.	Single births in 1915.									
	Total.	Stillbirths.		Live births.	Infant deaths.					
		Num-ber.	Per 1,000 births.		Total.		Early infancy.		All other causes.	
					Num-ber.	Infant mortality rate.	Num-ber.	Infant mortality rate.	Num-ber.	Infant mortality rate.
Total.....	10,915	378	34.6	10,537	1,023	97.1	257	33.9	666	63.2
First.....	2,956	126	42.6	2,830	259	91.5	104	36.7	155	54.6
Second.....	2,432	60	24.7	2,372	208	87.7	85	35.8	123	51.9
Third.....	1,478	43	29.1	1,435	126	87.8	52	36.2	74	51.6
Fourth.....	1,129	24	20.1	1,095	104	95.0	25	22.8	79	72.1
Fifth and sixth.....	1,441	50	34.7	1,391	137	98.5	37	26.6	100	71.9
Seventh to ninth.....	1,022	42	40.7	980	120	121.2	22	32.3	88	88.9
Tenth and later.....	447	23	51.5	424	69	162.7	22	51.9	47	110.8

¹ Includes miscarriages.

TABLE 143.—*Infant mortality rates, by age, color, and nativity of mother; live births in 1915 and live births, all pregnancies.*

Age of mother.	Total.		Live births to mothers of specified color and nativity.									
			Native white.			Foreign-born white.			Colored.			
	Infant deaths.		Infant deaths.		Infant deaths.		Infant deaths.		Infant deaths.			
	Live births.	Number.	Infant mortality rate. ¹	Live births.	Number.	Infant mortality rate. ¹	Live births.	Number.	Infant mortality rate. ¹	Live births.	Number.	Infant mortality rate. ¹
Births in 1915.												
Total.....	10,797	1,117	103.5	6,739	646	95.9	2,753	264	95.9	1,305	207	158.6
Under 20.....	947	120	126.7	666	77	115.6	111	17	153.2	170	26	152.9
20-24.....	3,283	336	102.3	2,195	208	94.8	662	50	75.5	426	78	183.1
25-29.....	2,987	270	90.4	1,890	154	81.5	795	73	91.8	302	43	142.4
30-34.....	1,958	187	95.5	1,132	104	91.9	608	51	83.9	218	32	146.8
35 and over.....	1,618	203	125.5	856	103	120.3	576	72	125.0	186	28	150.5
35-39.....	1,206	153	126.9	630	77	122.2	432	55	127.3	144	21	145.8
40 and over.....	412	50	121.4	226	26	115.1	144	17	118.1	42	7	.....
Not reported.....	4	1	.....	.....	.....	.....	1	1	.....	3	.....	.....
Births, all pregnancies.												
Total.....	34,844	4,158	119.3	19,096	2,185	110.9	10,744	1,222	113.7	4,404	751	170.5
Under 20.....	4,105	608	148.1	2,507	343	136.8	780	125	160.3	818	140	171.1
20-24.....	12,583	1,492	118.6	7,370	812	110.2	3,652	406	111.2	1,561	274	175.5
25-29.....	9,851	1,061	107.7	5,513	550	99.8	3,281	334	101.8	1,057	177	167.5
30-34.....	5,441	614	112.8	2,817	284	100.8	1,989	219	110.1	635	111	174.8
35 and over.....	2,807	358	127.5	1,472	185	125.7	1,018	126	123.8	317	47	148.3
35-39.....	2,281	289	126.7	1,189	152	127.8	833	103	123.6	259	34	131.3
40 and over.....	526	69	131.2	283	33	116.6	185	23	124.3	58	13	.....
Not reported.....	57	25	.....	17	11	.....	24	12	.....	16	2	.....

¹ Not shown where base is less than 100.

TABLE 144.—*Stillbirth rates, by age, color, and nativity of mother; births in 1915.*

Age of mother.	Total.		Births to mothers of specified color and nativity.									
			Native white.			Foreign-born white.			Colored.			
	Stillbirths.		Stillbirths.		Stillbirths.		Stillbirths.		Stillbirths.			
	Births.	Number.	Per 1,000 births. ¹	Births.	Number.	Per 1,000 births. ¹	Births.	Number.	Per 1,000 births. ¹	Births.	Number.	Per 1,000 births. ¹
Total....	11,195	398	35.6	6,937	198	28.5	2,837	84	29.6	1,421	116	81.6
Under 20.....	995	48	48.2	688	22	32.0	116	5	43.1	191	21	109.9
20-24.....	3,382	99	29.3	2,251	56	24.9	676	14	20.7	455	29	63.7
25-29.....	3,087	100	32.4	1,942	52	26.8	820	25	30.5	325	23	70.8
30-34.....	2,029	71	35.0	1,162	30	25.8	622	14	22.5	245	27	110.2
35 and over.....	1,698	80	47.1	894	38	42.5	602	26	43.2	202	16	79.2
35-39.....	1,259	53	42.1	660	30	45.5	447	15	33.6	152	8	52.6
40 and over.....	439	27	61.5	234	8	34.2	155	11	71.0	50	8	.....
Not reported....	4	.....	.....	.....	.....	.....	1	.....	.....	3	.....	.....

¹ Not shown where base is less than 100.

TABLE 145.—Stillbirth rates, by age of mother and earnings of father: single births in 1915 and all births, all pregnancies.

Age of mother.	Births in families where fathers earned specified amount during year after birth in 1915.								
	Under \$550.			\$550-899			\$950 and over.		
	Stillbirths.			Stillbirths.			Stillbirths.		
	Births.	Num-ber.	Per 1,000 births. ¹	Births.	Num-ber.	Per 1,000 births. ¹	Births.	Num-ber.	Per 1,000 births. ¹
	Single births in 1915.								
Total.....	3,054	140	45.8	3,936	122	31.0	3,487	94	27.0
Under 20.....	379	24	63.3	304	10	25.4	172	10	58.1
20-24.....	923	35	37.9	1,302	33	25.2	949	18	19.0
25-29.....	737	35	47.5	1,056	33	31.2	1,101	25	22.7
30-34.....	494	28	56.7	653	21	32.2	744	19	25.5
35 and over.....	517	18	34.8	531	25	47.1	521	22	42.2
Not reported.....	4								
	Births, all pregnancies.								
Total.....	11,052	464	42.0	12,858	362	28.2	10,689	310	29.0
Under 20.....	1,628	89	54.1	1,609	45	28.0	859	30	34.9
20-24.....	3,948	161	40.8	4,833	117	24.2	3,680	97	26.4
25-29.....	2,858	107	37.4	3,552	92	25.9	3,360	96	28.6
30-34.....	1,688	64	38.4	1,854	63	34.0	1,881	52	27.6
35 and over.....	906	36	39.6	997	41	41.1	891	31	34.8
Not reported.....	42	8		13	4		18	4	

¹ Not shown where base is less than 100.

TABLE 146.—*Infant mortality rates, by age of mother and earnings of father; single live births in 1915 and all live births, all pregnancies.*

Age of mother.	Live births in families where fathers earned specified amount during year after birth in 1915.								
	Under \$550.			\$550-\$840.			\$850 and over.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹
Single births in 1915.									
Total.....	2,914	380	130.4	3,814	356	93.3	3,393	216	63.7
Under 20.....	355	52	146.5	384	43	112.0	162	10	61.7
20-24.....	888	115	129.5	1,269	103	81.2	931	68	73.0
25-29.....	702	82	116.8	1,023	90	88.0	1,076	56	52.0
30-34.....	466	56	120.2	632	56	88.6	725	47	64.8
35 and over.....	499	74	148.3	506	64	126.5	499	35	70.1
Not reported.....	4	1							
All births, all pregnancies.									
Total.....	10,588	1,549	146.3	12,496	1,504	120.4	10,379	909	87.6
Under 20.....	1,540	261	169.5	1,564	239	152.8	829	80	96.5
20-24.....	3,787	552	145.8	4,716	537	113.9	3,583	335	93.5
25-29.....	2,751	371	134.9	3,460	392	113.3	3,264	249	76.3
30-34.....	1,604	223	139.0	1,791	214	119.5	1,829	149	81.5
35 and over.....	872	132	151.4	966	116	121.3	860	87	101.2
Not reported.....	34	10		9	6		4	9	

¹Not shown where base is less than 100.

TABLE 147.—*Infant mortality rates from specified causes, by age of mother; single live births in 1915.*

Age of mother.	Single live births in 1915.						
	Total.	Infant deaths.					
		Total.	Infant mortality rate. ¹	Early infancy.		All other causes.	
				Number.	Infant mortality rate. ¹	Number.	Infant mortality rate. ¹
Total.....	10,537	1,023	97.1	357	33.9	666	63.2
Under 20.....	940	114	121.3	45	47.9	69	73.4
20-24.....	3,224	309	95.8	101	31.3	208	64.5
25-29.....	2,910	242	83.2	94	32.3	148	50.9
30-34.....	1,898	169	89.1	54	28.5	115	60.7
35 and over.....	1,563	188	120.3	62	39.7	126	80.6
35-39.....	1,164	141	121.1	48	41.2	93	79.9
40 and over.....	399	47	117.8	14	35.1	33	82.7
Not reported.....	4	1		1			

¹Not shown where base is less than 100.

TABLE 148.—*Premature births, by age, color, and nativity of mother; live births in 1915.*

Age of mother.	Live births to mothers of specified color and nativity.								
	Native white.			Foreign-born white.			Colored.		
	Total live births.	Premature live births.		Total live births.	Premature live births.		Total live births.	Premature live births.	
		Num-ber.	Per-cent. ¹		Num-ber.	Per-cent. ¹		Num-ber.	Per-cent. ¹
Total.....	6,739	415	6.2	2,753	97	3.5	1,305	79	6.1
Under 20.....	666	59	8.9	111	8	7.2	170	14	8.2
20-24.....	2,195	147	6.7	662	21	3.2	426	29	6.8
25-29.....	1,890	103	5.4	795	31	3.9	302	15	5.0
30-34.....	1,132	61	5.4	608	16	2.6	218	10	4.6
35 and over.....	866	45	5.3	576	21	3.6	186	10	5.4
35-39.....	630	36	5.7	432	15	3.5	144	6	4.2
40 and over.....	226	9	4.0	144	6	4.2	42	4	.....
Not reported.....	.....	.....	.....	1	.....	.....	3	1	.....

¹ Not shown where base is less than 100.TABLE 149.—*Stillbirth rates, by order of birth and age of mother; births in 1915, and births, all pregnancies.*

Age of mother.	Births of specified order of birth. ¹											
	First.			Second and third.			Fourth to sixth.			Seventh and later.		
	Births.	Stillbirths.		Births.	Stillbirths.		Births.	Stillbirths.		Births.	Stillbirths.	
		Num-ber.	Per 1,000 births. ²		Num-ber.	Per 1,000 births. ²		Num-ber.	Per 1,000 births. ²		Num-ber.	Per 1,000 births. ²
Births in 1915.												
Total.....	2,999	181	43.7	3,996	106	26.5	2,667	91	34.1	1,533	70	45.7
Under 20.....	741	35	47.2	246	12	48.8	8	1	.....	.....	.....	.....
20-24.....	1,449	53	36.6	1,588	35	22.0	337	11	32.6	8	.....	.....
25-29.....	561	26	46.3	1,400	33	22.4	966	34	35.2	151	7	46.4
30-34.....	187	16	85.6	546	14	25.6	853	23	27.0	443	18	40.6
35 and over.....	61	1	.....	207	12	58.0	500	22	44.0	930	45	48.8
35-39.....	54	1	.....	176	11	62.5	408	18	44.1	621	23	37.0
40 and over.....	7	.....	.....	31	1	.....	92	4	.....	309	22	71.2
Not reported.....	.....	.....	.....	.....	.....	.....	3	.....	.....	1	.....	.....
Births, all pregnancies.												
Total.....	10,754	427	39.7	12,977	347	26.7	8,496	267	31.4	3,820	162	42.4
Under 20.....	3,181	117	36.8	1,054	51	48.4	41	3	.....	.....	.....	.....
20-24.....	5,371	197	36.7	6,197	154	24.9	1,367	40	29.3	41	.....	.....
25-29.....	1,681	73	43.4	4,153	90	21.7	3,755	120	32.0	571	26	45.5
30-34.....	414	33	79.7	1,228	29	23.6	2,480	74	29.7	1,502	87	37.9
35 and over.....	99	5	.....	316	15	47.5	317	27	33.0	1,696	74	43.6
35-39.....	89	4	.....	277	13	46.9	769	22	31.0	1,293	68	37.1
40 and over.....	10	1	.....	39	2	.....	108	5	46.3	403	26	64.5
Not reported.....	8	2	.....	29	8	.....	26	3	.....	10	3	.....

¹ "Order of birth" means order of issue for births in 1915, and order of pregnancy for births, all pregnancies.² Not shown where base is less than 100.

TABLE 150.—Infant mortality rates, by order of birth and age of mother: see notes on 1510, 1515 and 1516, and see 1517 and 1518.

Age of mother.	Births of specified order of birth. ¹														
	First.			Second and third.			Fourth to sixth.			Seventh to ninth.			Tenth and later.		
	Live births.	Infant mortality rate. ²	Num-ber.	Live births.	Infant mortality rate. ²	Num-ber.	Live births.	Infant mortality rate. ²	Num-ber.	Live births.	Infant mortality rate. ²	Num-ber.	Live births.	Infant mortality rate. ²	Num-ber.
Total.....	2,868	272	94.8	3,880	359	92.3	2,576	277	107.5	1,016	129	127.0	447	80	179.0
Under 20.....	708	79	111.9	234	38	162.4	7	3	144.2	5	4	80.0	5	5	100.0
20-24.....	1,306	125	95.5	1,553	162	103.0	326	102	106.4	139	29	208.6	72	19	262.7
25-29.....	335	14	82.2	495	68	137.0	832	76	91.0	393	36	102.8	867	64	174.4
30-34.....	141	14	81.9	252	45	104.9	530	48	100.4	518	45	113.6	222	41	203.0
35 and over.....	40	10	100.0	186	71	107.7	360	41	105.1	395	15	123.0	168	23	136.4
35-39.....	43	8	100.0	165	19	109.1	340	41	105.1	395	15	123.0	168	23	136.4
40 and over.....	7	2	100.0	30	3	100.0	3	1	100.0	1	1	100.0	1	1	100.0
Not reported.....															
Births in 1915.															
Total.....	10,237	1,196	115.8	12,630	1,342	106.3	8,229	1,061	128.9	2,775	396	142.3	863	164	185.7
Under 20.....	3,064	414	135.1	1,003	181	180.5	38	13	160.6	37	11	196.5	2	2	100.0
20-24.....	5,174	568	109.8	6,043	686	113.5	1,327	225	127.9	514	101	154.6	238	57	239.5
25-29.....	1,606	153	95.1	4,063	337	82.9	3,635	465	108.4	1,207	154	127.6	210	100	163.4
30-34.....	381	39	102.4	1,199	102	85.1	2,416	262	108.4	1,010	123	121.8	397	65	163.7
35 and over.....	94	19	100.0	301	32	106.3	790	84	106.3	848	106	125.0	215	35	162.8
35-39.....	88	16	100.0	264	29	109.8	697	73	106.3	848	106	125.0	215	35	162.8
40 and over.....	9	3	100.0	37	3	100.0	103	11	106.3	162	7	104.9	1	1	100.0
Not reported.....	6	3	100.0	21	4	100.0	23	12	100.0	7	6	100.0	1	1	100.0
Births, all pregnancies.															
Total.....	10,237	1,196	115.8	12,630	1,342	106.3	8,229	1,061	128.9	2,775	396	142.3	863	164	185.7
Under 20.....	3,064	414	135.1	1,003	181	180.5	38	13	160.6	37	11	196.5	2	2	100.0
20-24.....	5,174	568	109.8	6,043	686	113.5	1,327	225	127.9	514	101	154.6	238	57	239.5
25-29.....	1,606	153	95.1	4,063	337	82.9	3,635	465	108.4	1,207	154	127.6	210	100	163.4
30-34.....	381	39	102.4	1,199	102	85.1	2,416	262	108.4	1,010	123	121.8	397	65	163.7
35 and over.....	94	19	100.0	301	32	106.3	790	84	106.3	848	106	125.0	215	35	162.8
35-39.....	88	16	100.0	264	29	109.8	697	73	106.3	848	106	125.0	215	35	162.8
40 and over.....	9	3	100.0	37	3	100.0	103	11	106.3	162	7	104.9	1	1	100.0
Not reported.....	6	3	100.0	21	4	100.0	23	12	100.0	7	6	100.0	1	1	100.0

¹ "Order of birth" means order of issue for births in 1915 and order of pregnancy for births, all pregnancies.

² Not shown where base is less than 100.

TABLE 151.—*Infant mortality rates, by order of birth and age and color of mother, single live births in 1915, and all live births, all pregnancies.*

Age and color of mother.	Live births of specified order of birth. ¹											
	First.			Second and third.			Fourth and sixth.			Seventh and later.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Num-ber.	Infant mor-tality rate. ²		Num-ber.	Infant mor-tality rate. ²		Num-ber.	Infant mor-tality rate. ²		Num-ber.	Infant mor-tality rate. ²
Single births in 1915.												
White mothers.	2,601	223	85.7	3,368	268	79.6	2,133	193	90.5	1,158	150	129.5
Under 20.....	604	65	107.6	166	24	144.6	3	1	.....	.....	.....	.....
20-24.....	1,282	96	74.9	1,303	114	87.5	220	26	118.2	3	2	.....
25-29.....	504	39	77.4	1,251	76	60.8	766	68	88.8	93	18	.....
30-34.....	153	14	91.5	475	36	75.8	729	59	80.9	325	32	98.5
35 and over.....	58	9	.....	173	18	104.0	414	38	91.8	737	98	133.0
35-39.....	51	7	.....	147	15	102.0	330	32	97.0	496	68	137.1
40 and over.....	7	2	.....	26	3	.....	84	6	.....	241	30	124.5
Not reported.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....
Colored mothers	229	36	157.2	439	66	150.3	353	48	136.0	256	39	152.3
Under 20.....	98	11	.....	66	12	.....	3	1	.....	.....	.....	.....
20-24.....	93	22	.....	226	35	154.9	94	13	129.5	3	1	.....
25-29.....	21	2	.....	87	12	.....	139	18	.....	49	9	.....
30-34.....	15	.....	.....	38	4	.....	77	12	.....	84	12	.....
35 and over.....	2	1	.....	22	3	.....	38	4	.....	119	17	142.9
35-39.....	2	1	.....	18	3	.....	34	3	.....	86	12	.....
40 and over.....	.....	.....	.....	4	.....	.....	4	1	.....	33	5	.....
Not reported.....	.....	.....	.....	.....	.....	.....	2	.....	.....	1	.....	.....
Births, all pregnancies.												
White mothers.	9,225	1,035	112.2	11,131	1,098	98.6	7,080	841	118.8	3,004	433	144.1
Under 20.....	2,523	336	133.2	745	127	170.5	19	5	.....	.....	.....	.....
20-24.....	4,755	501	105.4	5,245	557	106.2	1,000	152	152.0	22	8	.....
25-29.....	1,516	143	94.3	3,766	293	77.8	3,130	379	121.1	382	69	180.6
30-34.....	340	35	102.9	1,090	88	80.7	2,187	219	100.1	1,189	161	135.4
35 and over.....	87	17	.....	270	29	107.4	729	76	104.3	1,404	189	134.6
35-39.....	78	14	.....	239	26	108.8	631	68	107.8	1,074	147	136.9
40 and over.....	9	3	.....	31	3	.....	98	8	.....	330	42	127.3
Not reported.....	4	3	.....	15	4	.....	15	10	.....	7	6	.....
Colored mothers	1,102	161	146.1	1,499	244	162.8	1,149	220	191.5	654	126	192.7
Under 20.....	541	78	144.2	258	54	209.3	19	8	.....	.....	.....	.....
20-24.....	419	67	160.0	798	129	161.7	327	73	223.2	17	5	.....
25-29.....	92	10	.....	297	44	148.1	505	86	170.3	163	37	227.0
30-34.....	41	4	.....	109	14	128.4	229	43	187.8	256	50	195.3
35 and over.....	7	2	.....	31	3	.....	61	8	.....	218	34	156.0
35-39.....	7	2	.....	25	3	.....	56	5	.....	171	24	140.4
40 and over.....	.....	.....	.....	6	.....	.....	5	3	.....	47	10	.....
Not reported.....	2	.....	.....	6	.....	.....	8	2	.....	.....	.....	.....

¹“Order of birth” means order of issue for births in 1915 and order of pregnancy for births, all pregnancies.
² Not shown where base is less than 100.

TABLE 152.—*Infant mortality rates, by order of birth, age of mother, and earnings of father; live births, all pregnancies.*

Age of mother and earnings of father during year after birth in 1915.	Live births, all pregnancies, of specified order of pregnancy. ¹											
	First.			Second and third.			Fourth to sixth.			Seventh and later.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²		Number.	Infant mortality rate. ²
Under \$850...	6,536	842	128.8	8,230	900	120.3	5,684	790	139.0	2,634	431	163.6
Age of mother:												
Under 20.....	2,290	332	145.6	708	156	196.7	31	12	.....	.....	.....	.....
20-24.....	3,239	389	120.1	4,216	500	118.6	1,013	188	185.6	35	12	.....
25-29.....	796	88	110.6	2,427	245	100.9	2,572	342	133.0	416	88	211.5
30-34.....	168	18	107.1	647	72	111.3	1,554	185	119.0	1,026	162	157.9
35 and over.....	48	13	.....	132	15	113.6	497	56	112.7	1,151	164	142.5
Not reported....	5	2	.....	15	2	.....	17	7	.....	6	5	.....
\$850 and over.	3,385	265	87.1	3,904	287	73.5	2,204	221	100.3	886	106	119.6
Age of mother:												
Under 20.....	657	62	94.4	166	17	102.4	6	1	.....	.....	.....	.....
20-24.....	1,738	155	89.2	1,573	149	94.7	268	30	111.9	4	1	.....
25-29.....	749	58	78.2	1,492	78	52.3	907	99	109.2	116	17	146.6
30-34.....	197	17	86.3	511	37	52.8	755	62	82.1	366	43	117.5
35 and over.....	43	5	.....	156	14	89.7	262	24	91.6	399	44	110.3
Not reported....	1	1	.....	6	2	.....	6	5	.....	1	1	.....

¹ For total rates, all orders of pregnancy combined, see Table 150, page 345.

² Not shown where base is less than 100.

TABLE 153.—*Infant mortality rates from specified causes, by age of mother and order of birth,¹ single live births in 1915.*

Age of mother.	Infant mortality rates ² from specified causes among births of specified order of birth. ¹											
	All births.		First.		Second and third.		Fourth to sixth.		Seventh to ninth.		Tenth and later.	
	Early in-fancy.	All other causes.	Early in-fancy.	All other causes.	Early in-fancy.	All other causes.	Early in-fancy.	All other causes.	Early in-fancy.	All other causes.	Early in-fancy.	All other causes.
Total.....	33.9	63.2	36.7	54.8	36.0	51.7	24.9	72.0	32.3	88.9	51.9	110.8
Under 20.....	47.9	73.4	45.6	62.7	56.0	99.1	.....	.....	.....	.....	.....	.....
20-24.....	31.1	64.0	28.4	57.5	32.7	64.7	35.0	89.2	.....	.....	.....	.....
25-29.....	32.2	50.7	38.1	40.0	32.9	32.9	23.2	71.8	65.7	131.4	.....	.....
30-34.....	28.5	60.7	47.6	35.7	37.0	40.9	17.4	70.7	26.3	70.2	59.7	104.5
35 and over.....	30.4	80.1	83.3	83.3	56.4	51.3	32.5	58.4	25.8	87.3	51.1	113.6
35-39.....	41.2	79.9	94.3	56.6	60.6	48.5	32.9	63.2	28.4	79.9	51.5	144.3
40 and over	34.2	80.7	.....	.....	.....	.....	34.1	45.5	17.2	112.1	50.6	75.9

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 154.—Stillbirth and infant mortality rates, by interval since preceding birth,¹ earnings of father, and color and nativity of mother; births in 1915, second and later in order of birth.¹

Earnings of father and color and nativity of mother.	Births in 1915 (second and later in order of birth) ¹ after specified interval since preceding birth. ¹					
	Under 2 years.					
	Births.	Stillbirths.		Live births.	Infant deaths.	
		Number.	Per 1,000 births. ²		Number.	Infant mortality rate. ²
All mothers.....	2,149	77	35.8	2,072	304	146.7
Earnings of father:						
Under \$550.....	714	37	51.8	677	128	189.1
\$550-\$949.....	783	25	31.9	758	101	133.2
\$950-\$1,249.....	361	6	15.3	385	63	111.7
\$1,250 and over.....	176	2	11.4	174	14	80.5
No earnings.....	41	6	.....	35	10	.....
Not reported.....	44	1	.....	43	8	.....
Native white mothers.....	1,195	21	17.6	1,174	162	138.0
Earnings of father:						
Under \$550.....	216	2	9.3	214	44	205.6
\$550-\$949.....	507	12	23.7	495	69	138.4
\$950-\$1,249.....	293	3	10.2	290	33	113.5
\$1,250 and over.....	139	2	14.4	137	9	65.7
No earnings.....	16	2	.....	14	4	.....
Not reported.....	24	.....	.....	24	3	.....
Foreign-born white mothers.....	554	16	28.9	538	74	137.5
Earnings of father:						
Under \$550.....	212	5	23.6	207	31	149.8
\$550-\$949.....	264	7	24.3	197	24	121.8
\$950 and over.....	118	3	25.4	115	11	95.7
No earnings.....	9	1	.....	8	3	.....
Not reported.....	11	.....	.....	11	5	.....
Colored mothers.....	400	40	100.0	360	68	188.9
Earnings of father:						
Under \$550.....	286	30	104.9	256	53	207.0
\$550 and over.....	89	6	.....	83	12	.....
No earnings.....	16	3	.....	13	3	.....
Not reported.....	9	1	.....	8	.....	.....

¹ Includes miscarriages.

² Not shown where base is less than 100.

BLE 154.—Stillbirth and infant mortality rates, by interval since preceding birth,¹ earnings of father, and color and nativity of mother; births in 1915, second and later in order of birth¹—Continued.

Earnings of father and color and nativity of mother.	Births in 1915 (second and later in order of birth) ¹ after specified interval since preceding birth ¹ —Continued.									
	2 years and over.						Not reported.			
	Births.	Stillbirths.		Live births.	Infant deaths.		Births.	Stillbirths.	Live births.	Infant deaths.
		Num. ber.	Per 1,000 births. ²		Num. ber.	Infant mortality rate. ²				
All mothers.....	5,999	189	31.5	5,810	536	92.3	48	1	47	5
Earnings of father:										
Under \$500.....	1,717	57	33.2	1,660	197	118.7	16	1	15	4
\$550-\$949.....	2,111	68	32.2	2,043	195	95.4	13		13	
\$950-\$1,349.....	1,236	31	25.1	1,205	69	57.3	14		14	
\$1,250 and over.....	699	22	31.5	677	38	56.1	3		3	1
No earnings.....	117	5	42.7	112	23	205.4	1		1	
Not reported.....	119	6	50.4	113	14	123.9	1		1	
Native white mothers.....	3,508	99	28.2	3,409	302	88.6	23		23	1
Earnings of father:										
Under \$500.....	582	10	17.8	552	74	134.1	2		2	
\$550-\$949.....	1,348	45	33.4	1,303	125	95.9	7		7	
\$950-\$1,349.....	947	21	22.2	926	54	58.3	12		12	
\$1,250 and over.....	546	19	34.8	527	33	62.6	1		1	1
No earnings.....	41	2		39	7		1		1	
Not reported.....	64	2		62	9					
Foreign-born white mothers.....	1,740	46	26.4	1,694	134	79.1	17		17	2
Earnings of father:										
Under \$500.....	664	13	19.6	651	58	89.1	8		8	2
\$550-\$949.....	805	18	29.8	547	50	85.2	5		5	
\$950 and over.....	407	10	24.6	397	16	40.3	4		4	
No earnings.....	35	1		34	8					
Not reported.....	29	4		25	2					
Colored mothers.....	751	44	58.6	707	100	141.4	8	1	7	2
Earnings of father:										
Under \$500.....	491	34	69.2	457	65	142.2	6	1	5	2
\$550 and over.....	193	8	41.5	185	24	129.7	1		1	
No earnings.....	41	2		39	8					
Not reported.....	26			26	3		1		1	

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 155.—*Infant mortality and stillbirth rates, by interval since preceding birth¹ and period of gestation; births in 1915.*

Interval since preceding birth ¹ and period of gestation.	Births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.
		Number.	Per cent.			
Total.....	11,195	398	3.6	10,797	1,117	103.5
No previous birth.....	2,999	131	4.4	2,868	273	94.8
Interval:						
1 year.....	2,149	77	3.6	2,072	304	145.7
2 years.....	3,045	95	3.1	2,950	291	93.6
3 years.....	1,398	24	2.4	1,374	118	85.5
4 years and over.....	1,556	60	3.9	1,496	127	84.9
Not reported.....	48	1	2.1	47	5	105.4
Full-term births.....	10,430	234	2.2	10,196	792	77.7
No previous birth.....	2,726	90	3.3	2,636	173	65.6
Interval:						
1 year.....	1,979	41	2.1	1,938	219	112.0
2 years.....	2,391	49	1.7	2,342	219	77.1
3 years.....	1,332	20	1.5	1,312	88	67.1
4 years and over.....	1,459	33	2.3	1,426	91	63.4
Not reported.....	43	1	2.3	42	2	47.6
Premature births.....	755	164	21.7	591	322	544.5
No previous birth.....	271	41	15.1	230	96	425.1
Interval:						
1 year.....	158	36	21.4	122	85	642.9
2 years.....	161	46	30.5	105	70	665.7
3 years.....	64	14	21.9	50	30	600.0
4 years and over.....	95	27	28.7	69	36	621.7
Not reported.....	5	.....	.....	5	3	600.0
Term not reported.....	10	.....	.....	10	3	300.0
No previous birth.....	2	.....	.....	2	1	500.0
Interval:						
1 year.....	2	.....	.....	2	.....	.....
2 years.....	3	.....	.....	3	2	666.7
3 years.....	2	.....	.....	2	.....	.....
4 years and over.....	1	.....	.....	1	.....	.....
Not reported.....	.....	.....	.....	.....	.....	.....

¹ Includes miscarriages.

TABLE 156.—Interval since preceding birth,¹ by earnings of father and color and nativity of mother; live births in 1915, second and later in order of birth.²

Earnings of father and color and nativity of mother	Live births in 1915 second and later in order of birth. ¹		
	Total.	Interval under 2 years since preceding birth. ¹	
		Number.	Per cent. ²
All mothers.....	7,929	2,072	26.1
Native white mothers.....	4,606	1,174	25.5
Earnings of father:			
Under \$550.....	768	214	27.9
\$550-\$949.....	1,805	485	27.4
\$950-\$1,249.....	1,228	290	23.6
\$1,250 and over.....	665	137	20.6
No earnings.....	54	14	.....
Not reported.....	86	24	.....
Foreign-born white mothers.....	2,249	538	23.9
Earnings of father:			
Under \$550.....	866	207	23.9
\$550-\$949.....	789	197	25.0
\$950-\$1,249.....	337	81	24.0
\$1,250 and over.....	179	34	19.0
No earnings.....	42	8	.....
Not reported.....	36	11	.....
Colored mothers.....	1,074	360	33.5
Earnings of father:			
Under \$550.....	718	256	35.7
\$550 and over.....	269	83	30.9
No earnings.....	52	13	.....
Not reported.....	35	8	.....

¹ Includes miscarriages.² Not shown where base is less than 100.

TABLE 157.—*Number of mother's pregnancies, by duration of mother's married life and earnings of father; live births, all pregnancies.*

Duration of mother's married life and earnings of father during year after 1915 birth.	Live births, ¹ all pregnancies, to mothers reporting specified number of pregnancies.			
	2 and 3	4-6	7-9	10 and over.
Earnings of father under \$550.....	2,142	3,508	2,731	1,821
Years married:				
Under 6 years.....	1,535	277	7	.....
6-10 years.....	504	1,801	290	.....
11-15 years.....	74	1,036	1,090	245
16 and over.....	29	394	1,354	1,373
Earnings of father \$550-\$849.....	3,209	4,228	2,525	1,429
Years married:				
Under 6 years.....	2,251	273	.....	.....
6-10 years.....	806	2,247	215	.....
11-15 years.....	135	1,376	1,172	143
16 and over.....	15	332	1,138	1,265
Earnings of father \$850-\$1,249.....	2,060	2,174	1,271	720
Years married:				
Under 6 years.....	1,265	107	.....	.....
6-10 years.....	621	1,065	100	.....
11-15 years.....	138	774	673	61
16 and over.....	26	208	498	639
Earnings of father \$1,250 and over.....	1,164	1,111	568	219
Years married:				
Under 6 years.....	588	31	.....	.....
6-10 years.....	466	577	50	5
11-15 years.....	74	369	301	39
16 and over.....	26	134	313	285

¹ Omitting those for which earnings of father during year after 1915 birth were "none" or "not reported."

TABLE 158.—*Infant mortality rates, by number of mother's pregnancies, duration of married life and earnings of father; live births, all pregnancies.*

Live births, all pregnancies, to mothers reporting specified duration of married life.												
Number of mother's pregnancies, and earnings of father during year after 1915 birth.	Under 6 years.			6-10 years.			11-15 years.			16 years and over		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Num-ber.	Infant mor-tality rate. ¹		Num-ber.	Infant mor-tality rate. ¹		Num-ber.	Infant mor-tality rate. ¹		Num-ber.	Infant mor-tality rate. ¹
Earnings of father under \$550.....	2,450	346	141.2	2,602	330	126.8	2,441	407	166.7	3,050	457	149.8
Number of mother's pregnancies:												
1-3.....	2,166	296	132.0	511	36	70.5	77	14	.....	29	4	.....
4-6.....	277	58	209.4	1,801	224	124.4	1,036	120	115.8	394	40	101.5
7-9.....	7	2	.....	290	70	241.4	1,080	192	177.8	1,354	164	121.1
10 and over.....	.....	.....	.....	.....	.....	.....	248	81	326.6	1,273	249	195.6
Earnings of father, \$550-\$849.....	3,597	399	110.9	3,283	398	121.2	2,831	354	125.0	2,771	350	125.3
Number of mother's pregnancies:												
1-3.....	3,324	349	105.0	821	73	88.9	140	13	92.9	15	1	.....
4-6.....	273	50	183.2	2,247	278	123.7	1,376	133	96.7	332	30	90.4
7-9.....	.....	.....	.....	215	47	218.6	1,172	173	147.6	1,138	125	109.8
10 and over.....	.....	.....	.....	.....	.....	.....	143	35	244.8	1,286	194	150.9
Earnings of father, \$850 or over.....	2,959	236	79.8	2,951	228	77.3	2,312	204	88.2	2,150	241	112.1
Number of mother's pregnancies:												
1-3.....	2,821	222	78.7	1,134	59	52.0	214	14	65.4	54	5	.....
4-6.....	138	14	101.4	1,662	136	81.8	1,143	79	69.1	342	22	64.3
7-9.....	.....	.....	.....	150	33	220.0	874	100	114.4	810	79	97.5
10 and over.....	.....	.....	.....	5	.....	.....	81	11	.....	944	135	143.0
Earnings of father, none.....	167	30	179.6	160	26	162.5	170	19	111.8	185	32	173.0
Number of mother's pregnancies:												
1-3.....	159	30	188.7	42	5	.....	5	.....	.....	.....	.....	.....
4-6.....	8	.....	.....	108	21	194.4	102	11	107.8	24	6	.....
7-9.....	.....	.....	.....	10	.....	.....	63	8	.....	64	13	.....
10 and over.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	97	13	.....
Earnings of father, not reported.....	222	31	139.6	120	7	58.3	162	17	104.9	175	29	165.7
Number of mother's pregnancies:												
1-3.....	198	27	136.4	35	3	.....	12	1	.....	.....	.....	.....
4-6.....	24	4	.....	85	4	.....	116	12	103.4	15	3	.....
7-9.....	.....	.....	.....	.....	.....	.....	34	4	.....	73	10	.....
10 and over.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	87	16	.....

¹ Not shown where base is less than 100.

TABLE 159.—*Infant mortality rates, by interval between birth in 1915 and preceding birth,¹ live births in 1915, second and later in order of birth,² and live births preceding single births in 1915.*

Interval between 1915 birth and preceding birth.	Live births preceding single births in 1915. ²			Live births in 1915.		
	Total.	Infant deaths.		Total.	Infant deaths.	
		Num-ber.	Infant mor-tality rate. ³		Num-ber.	Infant mor-tality rate. ³
Total.....	7,002	753	106.6	7,920	845	106.6
1 year.....	1,661	336	202.3	2,072	304	146.7
2 years.....	2,716	241	88.7	2,950	291	98.6
3 years.....	1,257	72	57.3	1,364	118	86.5
4 years and over.....	1,417	97	68.5	1,496	127	84.9
Not reported.....	11	7	.....	47	5	.....

¹ Includes miscarriages.

² These figures are approximate only, since if preceding birth resulted in plural live births only the one which lived the longer was included.

³ Not shown where base is less than 100.

TABLE 160.—*Stillbirth rates, by interval between birth in 1915 and preceding birth; births in 1915, second and later in order of birth, and births preceding single births in 1915.¹*

Interval between 1915 births and preceding birth. ¹	Births ¹ preceding single births in 1915. ²			Births ¹ in 1915.		
	Total.	Stillbirths and miscarriages.		Total.	Stillbirths and miscarriages.	
		Num-ber.	Per 1,000 issues. ³		Num-ber.	Per 1,000 issues. ³
Total.....	7,959	897	112.7	8,539	610	71.4
1 year.....	2,101	440	209.4	2,268	196	86.4
2 years.....	2,953	237	80.3	3,152	202	64.1
3 years.....	1,348	91	67.5	1,443	79	54.7
4 years and over.....	1,509	92	61.0	1,624	128	78.8
Not reported.....	48	37	.....	52	5	.....

¹ Includes miscarriages.

² These figures are approximate only, since if preceding issue resulted in plural issues, only the one resulting in a live birth or, if none resulted in a live birth, that one having the longer period of gestation was included.

³ Not shown where base is less than 100.

TABLE 161.—Mother reported pregnant within first year after birth, by age of infant when the pregnancy began, by color and nationality of mother; live births in 1915 to mothers reported pregnant within year after the birth in 1915 and infant deaths subsequent to commencement of pregnancy.

Color and nationality of mother.	Total.		Mother not reported pregnant within 1 year.		Mother reported pregnant in 1 year.		Mother reported pregnant in specified month in first year after birth of infant.							
	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.	First.		Second.		Third.		Fourth.	
							Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.
Total.....	10,797	1,117	9,234	711	1,563	406	7	6	16	10	64	29	127	54
White.....	9,492	910	8,192	583	1,300	327	4	3	13	9	51	21	106	44
Native.....	6,739	646	5,809	426	840	220	1	1	10	6	38	14	7	30
Foreign.....	2,753	264	2,293	157	460	107	3	2	3	3	13	7	32	14
Jewish.....	961	49	871	33	90	16	.....	.....	.....	.....	2	1	6	2
Polish.....	625	102	451	61	144	51	.....	.....	1	1	6	4	11	5
Italian.....	412	36	294	19	118	17	3	2	.....	.....	2	1	9	3
All other.....	755	77	647	54	108	23	.....	.....	2	2	3	1	6	4
Colored.....	1,305	1,207	1,042	128	263	79	3	3	3	1	13	8	21	10

Color and nationality of mother.	Mother reported pregnant in specified month in first year after birth of infant.																	
	Fifth.		Sixth.		Seventh.		Eighth.		Ninth.		Tenth.		Eleventh.		Twelfth.		Month not reported.	
	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.	Live births.	Infant deaths.
Total.....	205	63	186	44	221	59	174	34	161	24	136	28	112	24	76	13	78	18
White.....	174	49	144	33	182	52	140	27	136	17	121	25	96	22	67	11	66	14
Native.....	116	30	92	17	122	38	83	17	87	12	79	19	53	17	43	10	42	9
Foreign.....	58	19	32	16	60	14	57	10	49	5	42	6	43	5	24	1	24	5
Jewish.....	10	1	9	3	11	2	15	3	6	.....	10	2	12	1	3	.....	5	1
Polish.....	19	11	12	7	25	9	21	6	16	3	13	3	10	1	6	.....	4	1
Italian.....	11	1	17	4	14	2	11	1	12	1	13	1	11	.....	3	.....	7	1
All other.....	18	6	14	2	10	1	10	.....	15	1	6	.....	9	3	7	1	8	2
Colored.....	31	14	42	11	39	7	34	7	25	7	15	3	16	2	9	2	12	4

TABLE 162.—*Infant deaths, by age at death, relation of infant death to mother's pregnancy after the birth, and color and nativity of mother; live births in 1915 to mothers pregnant within year after birth.*

Age at death of infant and color and nativity of mother.	Deaths among infants whose mothers became pregnant within year after birth.			
	Died in a previous month.	Died in the same month.	Died in a succeeding month.	Month of pregnancy not reported. ¹
All mothers.....	300	27	74	5
Under 1 month.....	178	2		
1 month, under 2.....	19	1		
2 months, under 3.....	24		2	1
3 months, under 4.....	23	3	1	1
4 months, under 5.....	19	3	4	1
5 months, under 6.....	16	4	10	
6 months, under 7.....	7	3	7	
7 months, under 8.....	5	2	7	2
8 months, under 9.....	6	2	9	
9 months, under 10.....	2	5	11	
10 months, under 11.....	1	1	12	
11 months, under 12.....	1	1	11	
Native white mothers.....	160	15	41	4
Under 1 month.....	93			
1 month, under 2.....	7			
2 months, under 3.....	13			1
3 months, under 4.....	14	2	1	1
4 months, under 5.....	12	2	2	
5 months, under 6.....	7	1	5	
6 months, under 7.....	5	2	4	
7 months, under 8.....	3	1	4	2
8 months, under 9.....	4	2	6	
9 months, under 10.....	1	3	6	
10 months, under 11.....	1	1	6	
11 months, under 12.....	1	1	7	
Foreign-born white mothers.....	75	9	22	1
Under 1 month.....	47	1		
1 month, under 2.....	7	1		
2 months, under 3.....	8		1	
3 months, under 4.....	1	1		
4 months, under 5.....	3		1	1
5 months, under 6.....	6	2	3	
6 months, under 7.....	1	1	1	
7 months, under 8.....	1	1	2	
8 months, under 9.....			2	
9 months, under 10.....	1	2	4	
10 months, under 11.....			6	
11 months, under 12.....			2	
Colored mothers.....	65	3	11	
Under 1 month.....	38	1		
1 month, under 2.....	5			
2 months, under 3.....	3		1	
3 months, under 4.....	8			
4 months, under 5.....	4	1	1	
5 months, under 6.....	3	1	2	
6 months, under 7.....	1		2	
7 months, under 8.....	1		1	
8 months, under 9.....			1	
9 months, under 10.....	2		1	
10 months, under 11.....				
11 months, under 12.....			2	

¹ Of the 18 infant deaths for which the month in which the mother became pregnant was not reported, 11 which occurred in the first month and 2 in the second have been classified in this table as "died in a previous month."

—*Monthly death rates, by month of life and by pregnancy of mother during infant's first year of life; live births in 1915.*

Month of life.	Infants born in 1915. ¹					
	Total.			Mother pregnant during infant's lifetime.		
	Surviving at beginning of month.	Deaths in month.		Surviving at beginning of month. ²	Deaths in month.	
		Number.	Per 1,000.		Number. ²	Per 1,000.
.....	10,528	208	19.8	.....	.....	.....
.....	10,320	65	6.3	.....	.....	.....
.....	10,255	63	6.1	.....	.....	.....
.....	10,192	62	6.1	.....	.....	.....
.....	10,130	71	7.0	.....	.....	.....
.....	10,059	76	7.6	.....	.....	.....
.....	9,983	56	5.6	.....	.....	.....
.....	9,927	56	5.6	.....	.....	.....
.....	9,871	51	5.2	.....	.....	.....
.....	9,820	49	5.0	.....	.....	.....
.....	9,771	45	4.6	.....	.....	.....
.....	9,726	46	4.7	.....	.....	.....

¹Infants who died immediately after birth, not fed.
²Infants surviving at the beginning of each month, whose mothers had previously become
 ily deaths among infants shown in preceding column.

—*Computed infant mortality rates, by mother's pregnancy during infant's lifetime; infants born in 1915.*

Period.	Computed mortality rate per 1,000 infants fed.	
	All mothers.	Mothers pregnant during infant's lifetime.
11th month.....	60.4	154.5

—*Prevalence of interval under two years between births, by order of birth; single in 1915, second and later in order of birth,¹ and all live births, all pregnancies.²*

Order of birth.	Single live births in 1915.				Number of pregnancies.	All live births, all pregnancies. ¹		
	Total.	Interval under 2 years since preceding birth. ¹		Total.		Average interval under 2 years between pregnancies.		
		Number.	Per cent.			Number.	Per cent.	
.....	2,372	703	29.6	2	4,658	3,378	72.5	
.....	1,435	381	26.6	3	4,237	2,680	63.3	
.....	1,095	242	22.1	4	4,218	1,908	45.2	
.....	795	174	21.9	5	3,832	1,670	43.6	
.....	596	137	23.0	6	3,453	1,601	46.4	
.....	426	114	26.8	7	2,899	1,425	49.2	
.....	329	81	24.6	8	2,383	899	37.7	
.....	235	64	27.2	9	2,052	947	46.2	
.....	393	113	28.8	10-14	3,861	2,440	63.2	
.....	31	17	54.8	* 15	303	303	100.0	

¹Discardings.
²Births to mothers reporting but a single pregnancy.

TABLE 166.—Interval between births,¹ by age of mother; single live births in 1915, second and later in order of birth.¹

Interval since preceding birth. ¹	Single live births (second and later in order of birth ¹) to mothers of specified ages.							
	Total.		Under 20.		20-24.		25-29.	
	Live births.	Per cent distribution.	Live births.	Per cent distribution.	Live births.	Per cent distribution.	Live births.	Per cent distribution.
Total.....	7,707	100.0	238	100.0	1,849	100.0	2,385	100.0
1 year.....	2,026	26.3	142	59.7	703	38.0	592	24.8
2 years.....	2,867	37.2	84	35.3	778	42.1	941	39.5
3 years.....	1,316	17.1	12	5.0	249	13.5	410	17.2
4 years and over.....	1,451	18.8	.....	.....	114	6.2	482	19.1
Not reported.....	47	.6	.....	.....	5	.3	10	.4

Interval since preceding birth. ¹	Single live births (second and later in order of births ¹) to mothers of specified ages.						
	30-34.		35-39.		40 and over.		Not reported, live births.
	Live births.	Per cent distribution.	Live births.	Per cent distribution.	Live births.	Per cent distribution.	
Total.....	1,728	100.0	1,111	100.0	392	100.0	4
1 year.....	356	20.6	187	16.8	45	11.5	1
2 years.....	578	33.4	378	34.0	108	27.6	.....
3 years.....	341	19.7	223	20.0	81	20.7	1
4 years and over.....	438	25.3	313	28.2	154	39.2	.....
Not reported.....	15	.9	11	1.0	4	1.0	3

¹ Includes miscarriages.TABLE 167.—Infant mortality rates from specified causes and stillbirth rates, by order of birth¹ and interval since preceding birth;¹ single births in 1915, second and later in order of birth.¹

Interval since preceding birth and order of birth. ¹	Single births in 1915 second and later in order of birth. ¹										
	Total births.	Stillbirths.			Live births.	Infant deaths.					
		Number.	Per 1,000 births. ²	Live births.		Total.	Infant mortality rate. ³	Early infancy.		All other causes.	
								Number.	Infant mortality rate. ³	Number.	Infant mortality rate. ³
Total.....	7,959	252	31.7	7,707	764	99.1	253	32.8	511	66.3	
Second and third births....	3,910	103	26.3	3,807	334	87.7	137	36.0	197	51.7	
1 year.....	1,118	34	30.4	1,084	129	119.0	49	45.2	80	73.8	
2 years.....	1,410	29	20.5	1,381	106	76.8	41	29.7	65	47.1	
3 years.....	572	13	22.7	559	40	71.6	17	30.4	23	41.1	
4 years and over.....	802	27	33.7	775	59	76.8	30	38.7	29	37.4	
Interval not reported....	8	.....	.....	8	.....	.....	.....	.....	.....	.....
Fourth to sixth births.....	2,570	84	32.7	2,486	241	96.9	62	24.9	179	72.0	
1 year.....	578	25	43.3	553	82	148.8	18	32.5	64	115.7	
2 years.....	972	30	30.9	942	85	90.2	19	20.2	66	70.1	
3 years.....	513	9	17.5	504	35	69.4	9	17.9	26	51.6	
4 years and over.....	489	20	40.9	469	36	76.8	13	27.7	23	49.0	
Interval not reported....	18	.....	.....	18	3	.....	3	.....	.....	.....
Seventh and later births....	1,479	65	43.9	1,414	189	133.7	54	38.2	135	95.5	
1 year.....	405	16	39.5	389	68	174.8	14	36.0	54	138.8	
2 years.....	571	27	47.3	544	62	114.0	22	40.4	40	73.5	
3 years.....	263	10	38.0	253	35	138.3	10	39.5	25	96.8	
4 years and over.....	218	11	50.5	207	22	106.3	8	38.6	14	67.7	
Interval not reported....	22	1	.....	21	2	.....	.....	.....	2	.....

¹ Includes miscarriages.² Not shown where base is less than 100.

TABLE 168.—*Infant mortality rates from specified causes and stillbirth rates, by age of mother and interval since preceding birth;¹ single births in 1915, second and later in order of birth.¹*

Age of mother and interval since preceding birth. ¹	Single births in 1915 second and later in order of birth. ¹									
	Total births.	Stillbirths.		Live births.	Infant deaths.					
		Number.	Per 1,000 births. ²		Total.		Early infancy.		All other causes.	
					Number.	Infant mortality rate. ³	Number.	Infant mortality rate. ³	Number.	Infant mortality rate. ³
Interval 1 year.....	2,101	75	35.7	2,026	279	137.7	81	40.0	198	97.7
Under 20.....	162	10	65.8	142	24	169.0	10	70.4	14	98.6
20-24.....	721	18	25.0	703	87	123.8	27	38.4	60	85.3
25-29.....	612	20	32.7	592	81	136.8	26	43.9	55	92.9
30-34.....	399	13	35.2	356	45	126.4	8	22.5	37	103.9
35 and over.....	246	14	56.9	232	42	181.0	10	43.1	32	137.9
35-39.....	199	12	60.3	187	37	197.9	9	48.1	28	149.7
40 and over.....	47	2	.....	45	5	.....	1	.....	4	.....
Not reported.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....
Interval 2 years.....	2,953	86	29.1	2,867	253	88.3	82	28.6	171	59.6
Under 20.....	86	2	.....	84	11	.....	3	.....	8	.....
20-24.....	794	16	20.2	778	72	92.5	21	29.6	49	63.0
25-29.....	967	26	26.9	941	66	71.2	22	23.4	44	46.8
30-34.....	602	24	39.9	578	42	72.7	17	29.4	25	43.3
35 and over.....	504	18	35.7	486	62	127.6	17	35.0	45	92.6
35-39.....	390	12	30.8	378	44	116.4	14	37.0	30	79.4
40 and over.....	114	6	52.6	108	18	166.7	3	27.8	15	138.9
Interval 3 years.....	1,348	32	23.7	1,316	110	83.6	36	27.4	74	56.2
Under 20.....	12	.....	.....	12	3	.....	.....	.....	3	.....
20-24.....	254	5	19.7	249	22	88.4	9	36.1	13	52.2
25-29.....	420	10	23.8	410	25	61.0	9	22.0	16	39.0
30-34.....	345	4	11.6	341	26	76.2	7	20.5	19	55.7
35 and over.....	316	13	41.1	303	34	112.2	11	36.3	23	75.9
35-39.....	230	8	34.3	222	23	103.6	7	31.5	16	72.1
40 and over.....	86	5	.....	81	11	.....	4	.....	7	.....
Not reported.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....
Interval 4 years and over.....	1,509	58	38.4	1,451	117	80.6	51	35.1	66	45.5
20-24.....	118	4	33.9	114	9	78.9	2	17.5	7	61.4
25-29.....	447	15	33.6	432	29	67.1	17	39.4	12	27.8
30-34.....	451	13	28.8	438	40	91.3	13	29.7	27	61.6
35 and over.....	463	26	52.7	467	39	83.5	19	38.5	20	42.8
35-39.....	330	17	51.5	313	28	89.5	13	41.5	15	47.9
40 and over.....	163	9	55.2	154	11	71.4	6	39.0	5	32.5
Interval not reported.....	48	1	.....	47	5	.....	3	.....	2	.....
20-24.....	5	.....	.....	5	1	.....	1	.....	.....	.....
25-29.....	10	.....	.....	10	.....	.....	.....	.....	.....	.....
30-34.....	16	1	.....	15	2	.....	1	.....	1	.....
35 and over.....	15	.....	.....	15	.....	.....	.....	.....	.....	.....
35-39.....	11	.....	.....	11	1	.....	.....	.....	1	.....
40 and over.....	4	.....	.....	4	.....	.....	.....	.....	.....	.....
Not reported.....	2	.....	.....	2	1	.....	1	.....	.....	.....

¹ Includes miscarriages.
² Not shown where base is less than 100.

TABLE 169.—*Infant mortality rates from specified causes, by age of mother, order of birth,¹ and interval since preceding birth,¹ single live births in 1915, second and later in order of birth.¹*

Age of mother and order of birth. ¹	Single births (second and later in order of birth ¹) following preceding birth ¹ by specified interval.												
	1 year.					2 years and over.					Interval not reported.		
	Live births.	Infant deaths.				Live births.	Infant deaths.				Live births.	Infant deaths.	
		Early infancy.		All other causes.			Early infancy.		All other causes.			Early infancy.	All other causes.
		Num-ber.	Infant mortality rate. ²	Num-ber.	Infant mortality rate. ²		Num-ber.	Infant mortality rate. ²	Num-ber.	Infant mortality rate. ²			
Second and third ¹ births ¹	1,084	49	45.2	80	73.8	2,715	88	32.4	117	43.1	8		
Under 20.....	137	10	73.0	12	87.6	95	3		11				
20-24.....	554	22	39.7	46	83.0	972	28	28.8	53	54.5	3		
25-29.....	292	13	44.5	17	58.2	1,042	31	29.8	27	25.9	4		
30-34.....	83	3		4		429	16	37.3	17	39.6	1		
35 and over.....	18	1		1		177	10	56.5	9	50.8			
Fourth to sixth births ¹	553	18	32.5	64	115.7	1,915	41	21.4	115	60.1	18	3	
Under 20.....	5			2		1							
20-24.....	144	4	27.8	13	90.3	168	6	35.7	15	89.3	2	1	
25-29.....	225	8	35.6	27	120.0	674	13	19.3	38	56.4	6		
30-34.....	137	2	14.6	18	131.4	661	11	16.6	39	59.0	8	1	
35 and over.....	41	4		4		410	11	26.8	23	56.1	1		
Age not reported.	1					1					1	1	
Seventh to ninth births ¹	259	11	42.5	34	131.3	719	21	29.2	52	72.3	12		2
20-24.....	5	1		1		1			1				
25-29.....	71	5	(³)	11		66	4		7				
30-34.....	106	2	18.9	9	84.9	232	7	30.2	14	60.3	4		1
35 and over.....	77	3	(³)	13		420	10	23.8	30	71.4	7		1
Age not reported.											1		
Tenth and later births ¹	130	3	23.1	20	153.8	285	19	66.7	27	94.7	9		
25-29.....	4	0				1							
30-34.....	30	1		6		35	3		1		2		
35 and over.....	96	2		14		249	16	64.3	26	104.4	7		

¹ Includes miscarriages.
² Not shown where base is less than 100.

TABLE 170.—Prevalence of plural births,¹ by color and nativity of mother; births¹ in 1915 and births,¹ all pregnancies.

Color and nativity of mother.	Births in 1915. ¹			Births, all pregnancies. ¹		
	Total.	Plural.		Total.	Plural.	
		Number.	Per cent.		Number.	Per cent.
Total.....	11,613	296	2.5	38,630	830	2.1
White.....	7,210	183	2.5	21,752	465	2.1
Native.....	2,894	74	2.6	11,632	250	2.1
Foreign born.....	1,509	39	2.6	5,246	115	2.2

Includes miscarriages.

TABLE 171.—Infant mortality, stillbirth, and miscarriage rates, by color and nativity of mother; single and plural births¹ in 1915.

Color and nativity of mother.	Births in 1915. ¹					
	Miscarriages per 100 births. ¹		Stillbirths per 100 births.		Infant mortality rate (per 1,000 live births).	
	Single.	Plural.	Single.	Plural.	Single.	Plural.
Total.....	3.6	5.4	3.5	7.1	97.1	361.5
White.....	3.2	4.7	2.8	5.3	90.1	327.6
Native.....	3.8	4.9	2.8	4.0	89.0	365.3
Foreign born.....	1.9	4.1	2.8	8.5	92.6	230.8
Colored.....	5.7	10.3	7.9	20.0	148.0	642.9

Includes miscarriages.

TABLE 172.—Infant mortality, stillbirth, and miscarriage rates, by color and nativity of mother; single and plural births,¹ all pregnancies.

Color and nativity of mother.	Births, all pregnancies. ¹					
	Miscarriages per 100 births.		Stillbirths per 100 births.		Infant mortality rate (per 1,000 live births).	
	Single.	Plural.	Single.	Plural.	Single.	Plural.
Total.....	6.6	10.6	3.3	7.3	113.5	407.0
White.....	6.1	10.3	2.7	6.4	106.5	383.3
Native.....	6.8	11.0	2.7	5.8	105.3	389.7
Foreign born.....	4.9	9.2	2.7	7.5	108.6	371.4
Colored.....	9.7	12.2	6.9	12.9	162.4	568.2

Includes miscarriages.

TABLE 173.—*Infant mortality, stillbirth, and miscarriage rates, by character of plural birth;¹ plural births¹ in 1915 and all pregnancies.*

Character of plural births. ¹	Plural births. ¹								
	Total births. ¹	Miscarriages.		Births.	Stillbirths.		Live births.	Infant deaths.	
		Number.	Per cent. ²		Number.	Per cent. ²		Number.	Infant mortality rate. ³
Plural births in 1915.....	296	16	5.4	280	20	7.1	260	94	361.5
Twin.....	281	15	5.3	266	18	6.8	248	86	346.8
Triplet.....	15	1	.....	14	2	.....	12	8	.....
Plural births, all pregnancies.....	830	88	10.6	742	84	7.3	688	280	407.0
Twin.....	806	83	10.3	723	83	7.2	671	270	402.4
Triplet.....	24	5	.....	19	2	.....	17	10	.....

¹ Includes miscarriages.² Not shown where base is less than 100.³ One twin (miscarriage) was born in 1914 prior to schedule year.TABLE 174.—*Prevalence of plural births, by age of mother; births in 1915 and births, all pregnancies.*

Age of mother.	Births in 1915.			Births, all pregnancies.		
	Total.	Plural		Total.	Plural.	
		Number.	Per cent.		Number.	Per cent.
Total.....	11,195	280	2.5	36,047	742	2.1
Under 20.....	995	11	1.1	4,276	41	1.0
20-24.....	3,382	64	1.9	12,976	193	1.5
25-29.....	3,087	80	2.6	10,160	228	2.2
30-34.....	2,029	62	3.1	5,634	158	2.8
35-39.....	1,259	45	3.6	2,368	98	4.1
40 and over.....	439	18	4.1	560	24	4.3
Not reported.....	4	.....	.....	73	.....	.....

TABLE 175.—*Prevalence of plural births, by order of birth; births in 1915 and births, all pregnancies.*

Order of birth. ¹	Births in 1915.			Births, all pregnancies.		
	Total.	Plural		Total.	Plural.	
		Number.	Per cent.		Number.	Per cent.
First.....	2,999	43	1.4	10,754	140	1.3
Second and third.....	3,996	86	2.2	12,977	211	1.6
Fourth to sixth.....	2,667	97	3.6	8,496	263	3.1
Seventh and later.....	1,833	54	3.5	3,820	128	3.4

¹ "Order of birth" means order of issue for births in 1915 and order of pregnancy births, all pregnancies.

TABLE 176.—Prevalence of plural births, by age of mother and order of birth;¹ births in 1915.

Age of mother.	Births of specified order of birth. ¹														
	First.			Second and third.			Fourth to sixth.			Seventh to ninth.			Tenth and later.		
	Total births	Plural births.		Total births	Plural births.		Total births	Plural births.		Total births	Plural births.		Total births	Plural births.	
		Number.	Per cent. ²		Number.	Per cent. ²		Number.	Per cent. ²		Number.	Per cent. ²		Number.	Per cent. ²
Total.....	2,999	43	1.4	3,996	86	2.2	2,667	97	3.6	1,058	26	2.5	475	28	5.9
Under 20.....	741	7	.9	246	2	.8	8	2	.....	8	2	(1)	.....	.....	.....
20-24.....	1,449	23	1.6	1,588	27	1.7	337	12	3.6	.....	2	.....	.....	.....	.....
25-29.....	561	10	1.8	1,409	38	2.7	966	30	3.1	144	8	1.4	7	.....	.....
30-34.....	187	3	1.6	546	19	3.5	853	24	2.8	363	8	2.2	80	8	10.0
35-39.....	54	.....	.....	179	.....	.....	408	29	7.1	412	8	1.9	209	8	3.8
40 and over.....	7	.....	.....	31	.....	.....	92	.....	.....	130	6	4.6	179	12	6.7
Not reported.....	.....	.....	.....	.....	.....	.....	3	.....	.....	1	.....	.....	.....	.....	.....

¹ Includes miscarriages.
² Not shown where base is less than 50.

TABLE 177.—Prevalence of plural births, by occurrence of previous plural births; all pregnancies.

Occurrence of previous plural birth.	Pregnancies.		
	Total.	Resulting in plural birth. ¹	
		Number.	Per cent.
Total.....	38,211	411	1.1
Subsequent to plural births ¹	734	27	3.7

¹ Includes miscarriages.

TABLE 178.—Prevalence of prematurity, by single and plural births; births in 1915.

Single and plural births.	Total births.	Premature births.	
		Number.	Per cent.
All births:			
Single.....	10,915	690	6.3
Plural.....	280	65	23.2
Live births:			
Single.....	10,537	534	5.1
Plural.....	280	57	21.9

TABLE 179.—*Infant mortality rates, by single and plural births and prematurity; births in 1915.*

Single and plural live births.	Infant mortality rate.	
	Full term.	Premature.
Single.....	73.9	58.1
Plural.....	266.0	170.5

¹ Based on 57 live births.

TABLE 180.—*Type of feeding, by month of life; infants born of plural births in 1915.*

Month of life.	Total twins and triplets.	Infant survivors having specified type of feeding.					
		Breast feeding.		Mixed feeding.		Artificial feeding.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
First.....	¹ 237	133	56.1	29	12.2	75	31.6
Second.....	218	102	46.8	38	17.4	78	35.8
Third.....	211	66	31.3	48	22.7	97	46.0
Fourth.....	203	48	23.6	52	25.6	103	50.7
Fifth.....	194	43	22.2	50	25.8	101	52.1
Sixth.....	189	38	20.1	48	25.4	103	54.5
Seventh.....	187	36	19.3	41	21.9	110	58.8
Eighth.....	184	27	14.7	46	25.0	111	60.3
Ninth.....	172	23	13.4	44	25.6	105	61.0
Tenth.....	168	17	10.1	46	27.4	105	62.5

¹ Excludes 23 infants who died immediately after birth, not fed.

TABLE 181.—*Infant mortality and stillbirth rates, by period of gestation; births ¹ in 1915.*

Period of gestation.	Total births. ¹	Miscarriages and stillbirths.		Live births.	Infant deaths.				
		Number.	Per cent of issues. ²		Total.		Under 1 month.	1 month under 3 months.	3 months and over.
					Number.	Infant mortality rate.			
Total.....	11,613	816	7.0	10,797	1,117	103.5	477	128	512
Full term.....	10,430	234	2.2	10,196	792	77.7	207	108	477
Premature.....	1,173	582	49.6	591	322	544.8	268	19	35
Under 7 months.....	507	418	82.4	89	86	.....	85	.....	1
7 months and over.....	664	164	24.7	500	284	468.0	181	19	34
Not reported.....	2	.....	.....	2	2	.....	2	.....	.....
Not reported.....	10	.....	.....	10	3	.....	2	1	.....

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 182.—*Infant mortality rates, by period of gestation and color and nativity of mother; live births in 1915.*

Color and nativity of mother.	Full-term live births.			Premature live births.		
	Total.	Infant deaths.		Total.	Infant deaths.	
		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹
Total.....	10,196	792	77.7	391	322	544.8
five white.....	6,322	432	68.3	415	213	513.3
foreign-born white.....	2,654	209	78.7	97	55	.....
colored.....	1,220	151	123.8	79	54	.....

Not shown where base is less than 100.

TABLE 183.—*Infant mortality and stillbirth rates, by sex of infant and color and nativity of mother; births¹ in 1915.*

Sex of infant and color and nativity of mother.	Total births. ¹	Miscarriages.		Births.	Stillbirths.		Live births.	Infant deaths.	Infant mortality rate.
		Number.	Per 1,000 births. ²		Number.	Per 1,000 births. ²			
All mothers.....	11,613	418	36.0	11,195	396	35.6	10,797	1,117	103.5
male.....	5,922	199	33.6	5,723	215	37.6	5,508	634	115.1
female.....	5,559	88	15.8	5,471	182	33.3	5,289	483	91.3
% reported.....	132	131	992.4	1	1	.....	.....	.....	.....
White mothers.....	10,104	330	32.7	9,774	282	28.9	9,492	910	95.9
male.....	5,177	144	27.8	5,033	156	30.8	4,878	526	107.8
female.....	4,902	62	12.9	4,740	126	26.6	4,614	384	83.2
% reported.....	125	124	992.0	1	1	.....	.....	.....	.....
Native.....	7,210	273	37.9	6,937	196	28.5	6,739	646	95.9
male.....	3,695	116	31.4	3,579	110	30.7	3,469	377	108.7
female.....	3,408	61	18.0	3,357	87	25.9	3,270	269	82.3
% reported.....	107	106	990.7	1	1	.....	.....	.....	.....
Foreign born.....	2,894	67	19.7	2,827	84	29.6	2,753	264	95.9
male.....	1,482	28	18.9	1,454	45	30.9	1,409	149	105.7
female.....	1,394	11	7.9	1,373	39	28.2	1,344	115	85.6
% reported.....	18	18	.....	.....	.....	.....	.....	.....	.....
Colored mothers.....	1,509	88	58.3	1,421	116	81.6	1,305	207	156.6
male.....	745	55	73.8	690	60	87.0	630	108	171.4
female.....	757	26	34.3	731	56	76.6	675	99	146.7
% reported.....	7	7	.....	.....	.....	.....	.....	.....	.....

¹ Includes miscarriages.

² Not shown where base is less than 100.

TABLE 184.—*Masculinity, by color and nationality of mother; births¹ in 1915.*

Color and nationality of mother. →	Total births. ¹				Live births.		
	Male.	Female.	Masculinity. ²	Sex not reported.	Male.	Female.	Masculinity. ²
Total.....	5,922	5,559	1,065.3	132	5,506	5,289	1,044.4
White.....	5,177	4,802	1,078.1	125	4,878	4,614	1,067.2
Native.....	3,695	3,408	1,064.2	107	3,469	3,270	1,064.9
Foreign born.....	1,482	1,394	1,063.1	18	1,409	1,344	1,048.4
Jewish.....	507	497	1,020.1	7	481	480	1,002.1
Polish.....	337	312	1,080.1	6	322	303	1,062.7
Italian.....	236	200	1,180.0	4	221	191	1,157.1
German.....	173	158	1,094.9	.....	167	151	1,108.0
Irish, English, Scotch, and English-Canadian ³	69	69	.....	.....	66	66	.....
Bohemian.....	54	58	.....	.....	51	56	.....
Lithuanian.....	55	49	.....	1	53	47	.....
All other ⁴	51	51	.....	.....	48	50	.....
Colored.....	745	757	984.1	7	630	675	933.3

Color and nationality of mother.	Stillbirths.				Miscarriages.		
	Male.	Female.	Masculinity. ²	Sex not reported.	Male.	Female.	Sex not reported.
Total.....	215	182	1,181.3	1	199	88	121
White.....	155	126	1,230.2	1	144	62	124
Native.....	110	87	.....	1	116	51	106
Foreign born.....	45	39	.....	.....	28	11	18
Jewish.....	17	13	.....	.....	9	4	7
Polish.....	12	6	.....	.....	3	3	6
Italian.....	6	8	.....	.....	9	1	4
German.....	4	5	.....	.....	2	2	.....
Irish, English, Scotch, and English-Canadian ³	1	2	.....	.....	2	1	.....
Bohemian.....	1	2	.....	.....	2	.....	.....
Lithuanian.....	2	2	.....	.....	.....	.....	1
All other ⁴	2	1	.....	.....	1	.....	.....
Colored.....	60	56	.....	.....	55	26	7

¹ Includes miscarriages.² Number of male births per 1,000 female births among those for whom sex is reported; not shown where base is less than 100.³ Includes 101 Irish, 19 English, 8 Scotch, and 10 English-Canadian.⁴ Includes 24 Russian, 19 Greek, 13 Magyar, 8 Norwegian, 6 Serbian, 5 French, 5 Slovak, 4 Rumanian, 4 Ruthenian, 3 French-Canadian, 3 Dutch, 2 Slavic (n. o. s.), 2 Spanish, 2 Swedish, 1 Danish, and 1 Arabian.

TABLE 185.—Miscarriages, stillbirths, and infant deaths, by interval between confinement and death of mother and by period of gestation; births ¹ in 1915 to mothers who died within year following confinement.

Interval between confinement and death of mother and period of gestation.	Births ¹ in 1915 to mothers who died within year following confinement.							
	Total births. ¹	Miscarriages.	Births.	Stillbirths.	Live births.	Infant deaths.		
						Total.	Gastric and intestinal diseases.	Early infancy.
All mothers who died year after confinement.....	106	13	93	21	72	35	7	18
Period:								
Full term.....	69		69	14	55	19	7	3
Premature.....	37	13	24	7	17	16		15
Under 7 months.....	16	13	3		3	3		3
7 months and over.....	21		21	7	14	13		12
Mothers who died in month following confinement.....	47	8	39	17	22	15	2	10
Period:								
Full term.....	24		24	13	11	5	2	
Premature.....	23	8	15	4	11	10		10
Under 7 months.....	9	8	1		1	1		1
7 months and over.....	14		14	4	10	9		9
Mothers who died in year but after first month following confinement.....	59	5	54	4	50	20	5	8
Period:								
Full term.....	45		45	1	44	14	5	3
Premature.....	14	5	9	3	6	6		5
Under 7 months.....	7	5	2		2	2		2
7 months and over.....	7		7	3	4	4		3

¹ Includes miscarriages.

TABLE 186.—Death of mother, by period elapsing after confinement and cause of mother's death; births ¹ in 1915 to mothers who died within year following confinement.

Cause of mother's death.	Births ¹ to mothers who died within year following confinement.					
	Total.		Within 3 months.		3 months or after.	
	Number.	Per 1,000 births. ¹	Number.	Per 1,000 births. ¹	Number.	Per 1,000 births. ¹
All causes.....	106	9.1	62	5.3	44	3.8
Connected with childbirth.....	50	4.3	44	3.8	6	.5
All other causes.....	56	4.8	18	1.5	38	3.3

¹ Includes miscarriages.

TABLE 187.—Stillbirths, miscarriages, and infant deaths, by color and nationality of mother, births¹ in 1915 and births,¹ all pregnancies.

Color and nationality of mother.	Births ¹ in 1915.			Births, ¹ all pregnancies.		
	Births. ¹	Stillbirths and miscarriages.	Infant deaths.	Births. ¹	Stillbirths and miscarriages.	Infant deaths.
Total.....	11,613	816	1,117	38,630	3,786	4,138
Native white.....	7,210	471	646	21,752	2,056	2,185
Jewish.....	1,011	50	49	3,870	309	332
Polish.....	655	30	102	2,856	177	428
Italian.....	440	23	36	1,883	182	189
All other foreign-born white.....	788	33	77	3,021	220	362
Colored.....	1,509	204	207	5,246	843	751

¹ Includes miscarriages.TABLE 188.—Stillbirth and miscarriage rates, by color and nationality of mother; births¹ in 1915 and births,¹ all pregnancies.

Color and nationality of mother.	Miscarriage rates (per 100).		Stillbirth rates (per 100).	
	Births ¹ in 1915.	Births, ¹ all pregnancies.	Births ¹ in 1915.	Births, ¹ all pregnancies.
Total.....	3.6	6.7	3.6	3.3
Native white.....	3.8	6.9	2.9	2.3
Jewish.....	2.0	5.5	3.0	2.6
Polish.....	1.8	3.8	2.8	2.5
Italian.....	3.2	6.6	3.3	3.2
All other foreign-born white.....	1.4	4.3	2.9	3.1
Colored.....	5.8	9.7	8.2	7.0

¹ Includes miscarriages.TABLE 189.—Miscarriage rates, by earnings of father and color and nativity of mother: births¹ in 1915 and births,¹ all pregnancies.

Earnings of father during year after 1915 birth.	Miscarriage rate ² (per 100 births ¹).					
	Native white mothers.		Foreign-born white mothers.		Colored mothers.	
	Births ¹ in 1915.	Births, ¹ all pregnancies.	Births ¹ in 1915.	Births, ¹ all pregnancies.	Births ¹ in 1915.	Births, ¹ all pregnancies.
Total.....	3.8	6.9	2.0	5.0	5.8	9.7
Under \$450.....	3.6	7.3	1.8	5.4	7.8	10.6
\$450-\$549.....	3.4	6.2	3.1	5.5	3.2	10.3
\$550-\$649.....	3.6	6.1	1.3	5.3	3.5	7.4
\$650-\$849.....	3.5	7.0	1.8	4.1	7.4	10.8
\$850-\$1,049.....	3.4	6.7	2.4	5.1	.....	8.4
\$1,050-\$1,249.....	4.2	6.8	1.9	3.6	.....	.....
\$1,250 and over.....	4.4	7.9	0.9	4.9	.....	.....
\$1,250-\$1,449.....	5.3	8.5	1.0	5.4	.....	.....
\$1,450-\$1,849.....	4.7	7.7	.....	3.6	.....	.....
\$1,850-\$2,249.....	2.6	5.2	.....	5.7	.....	.....
\$2,250-\$2,849.....	3.4	6.4	.....	.....	.....	.....
\$2,850 and over.....	3.7	9.5	.....	.....	.....	.....
No earnings.....	7.8	7.7	.....	3.4	.....	6.7
Not reported.....	6.4	5.9	.....	6.0	.....	8.0

¹ Includes miscarriages.² Not shown where base is less than 100.

TABLE 190.—Stillbirth and miscarriage rates, by employment of mother away from home and color and nativity; births,¹ all pregnancies.

Employment of mother away from home.	Stillbirths and miscarriage rates.		
	Native white mothers.	Foreign-born white mothers.	Colored mothers.
	Miscarriage rates per 100 births. ¹		
Total.....	6.9	5.0	9.7
Never employed away.....	6.9	5.4	13.1
Employed before marriage only.....	6.1	4.9	6.7
Employed after marriage.....	9.6	4.7	10.3
	Stillbirth rates (per 100 births).		
Total.....	2.8	2.8	7.0
Never employed away.....	3.1	2.6	8.9
Employed before marriage only.....	2.5	2.6	5.9
Employed after marriage.....	3.4	3.3	7.1

¹ Includes miscarriages.

TABLE 191.—Legitimacy of birth¹ and scheduling of illegitimate births,¹ by color of mother; total registered births¹ in 1915.

Legitimacy of birth ¹ and scheduling of illegitimate births.	Registered births ¹ in 1915.								
	White mothers.			Colored mothers.			Color of mothers not reported.		
	Stillbirths and miscarriages.	Live births.	Infant deaths.	Stillbirths and miscarriages.	Live births.	Infant deaths.	Stillbirths and miscarriages.	Live births.	Infant deaths.
Total registered.....	755	11,200	1,136	372	2,183	414	32	4	1
Legitimate.....	709	10,916	1,018	249	1,602	251	4	4	1
Illegitimate.....	46	374	118	123	581	163	.....	.....	.....
Scheduled.....	29	163	52	78	409	120	.....	.....	.....
Not scheduled.....	17	211	66	45	172	43	.....	.....	.....
Legitimacy not reported.....	.....	.....	.....	.....	.....	.....	28	.....	.....

¹ Includes miscarriages.

* Includes 133 white live births and 123 colored live births whose condition at 1 year of age was unknown.

TABLE 192.—*Employment of mother during pregnancy, by color of mother; scheduled legitimate and illegitimate births¹ and total illegitimate births¹ in 1915.*

Employment of mother during pregnancy, and color.	Legitimate births ¹ (scheduled).		Illegitimate births ¹			
	Number.	Per cent distribution.	Total. ²		Scheduled.	
			Number.	Per cent distribution.	Number.	Per cent distribution.
All mothers.....	11,613	100.0	1,124	100.0	679	100.0
Not employed.....	8,361	72.3	122	10.9	119	17.5
Employed at home.....	1,819	15.7	57	5.1	43	6.3
Employed away from home.....	1,400	12.1	716	63.7	496	72.5
Employment not reported.....	3	.....	229	20.4	18	2.7
White mothers.....	10,104	100.0	420	100.0	192	100.0
Not employed.....	7,934	78.5	52	12.4	49	25.5
Employed at home.....	1,445	14.3	14	3.3	6	3.1
Employed away from home.....	723	7.2	223	53.1	126	65.0
Employment not reported.....	2	.....	131	31.2	11	5.7
Colored mothers.....	1,509	100.0	704	100.0	487	100.0
Not employed.....	457	30.3	70	9.9	70	14.4
Employed at home.....	374	24.8	43	6.1	37	7.6
Employed away from home.....	677	44.9	463	70.0	373	76.6
Employment not reported.....	1	.1	98	13.9	7	1.4

¹ Includes miscarriages.² Information about the mothers of the 445 issues for which no schedules were secured is based on the birth certificates.TABLE 193.—*Occupation of mother during pregnancy, by color of mother; illegitimate births¹ in 1915.*

Occupation of mother during pregnancy.	Illegitimate births ¹ in 1915.					
	Total.		White mothers.		Colored mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	1,124	100.0	420	100.0	704	100.0
Domestic.....	331	29.4	66	15.7	265	37.6
Factory operative.....	142	12.6	102	24.3	40	5.7
Textile and clothing.....	52	4.6	39	9.3	13	1.8
Cannery and food.....	41	3.6	30	7.1	11	1.6
Other factory and factory n. s.....	49	4.4	33	7.9	16	2.3
Laundress.....	94	8.4	8	1.9	86	12.2
Waitress, cook, or kitchen girl.....	66	5.9	7	1.7	59	8.4
Charwoman.....	57	5.1	1	.2	56	8.0
Nursemaid.....	21	1.9	5	1.2	16	2.3
Stenographer or clerk.....	13	1.2	13	3.1	.....	.....
Seamstress.....	11	1.0	10	2.4	1	.1
Chambermaid.....	10	.9	1	.2	9	1.3
Saleswoman.....	6	.5	6	1.4	.....	.....
Nurse.....	4	.4	4	1.0	.....	.....
School-teacher.....	3	.3	3	.7	.....	.....
Telephone operator.....	3	.3	3	.7	.....	.....
All other ²	12	1.1	8	1.9	4	.6
Not employed.....	122	10.9	52	12.4	70	9.9
Schoolgirl.....	17	1.5	6	1.2	12	1.7
Other.....	105	9.3	47	11.2	58	8.2
Not reported.....	229	20.4	131	31.2	98	13.9

¹ Includes miscarriages.² Includes 1 each of the following: Chorus girl, companion, hair-dresser, demonstrator, peddler, florist's helper, proprietor of grocery store, farm worker, maid in hospital, maid in department store, lady's maid, and prostitute.

TABLE 194.—Occupation of mother during pregnancy, by occupation during year after birth; scheduled illegitimate births¹ in 1915.

Occupation of mother during pregnancy.	Illegitimate births ¹ to mothers reporting specified occupation during year after birth in 1915.									
	Total.	Not employed.	Employed.							Employment not reported.
			Total.	Domestic.	Factory operative.	Laundress.	Charwoman.	Waitress, cook, or kitchen girl.	All others.	
All occupations.....	679	127	522	168	109	90	68	45	42	30
Domestic.....	190	16	167	128	9	10	7	6	7	7
Factory operative.....	115	19	96	5	81	3	4	1	2	.....
Textile and clothing.....	44	5	39	1	36	1	.....	1	.....	.....
Cannery and food.....	38	6	32	3	25	1	2	.....	1	.....
Other factory and factory n. s.....	33	8	25	1	20	1	2	.....	1	.....
Laundress.....	88	5	83	7	2	62	8	3	1	.....
Charwoman.....	56	3	53	8	1	1	42	.....	1	.....
Waitress, cook, or kitchen girl.....	42	2	40	4	1	1	3	29	2	.....
All other.....	51	12	34	4	2	2	1	.....	25	5
Not employed.....	119	70	47	12	13	10	3	5	4	2
Schoolgirl.....	14	10	3	.....	1	1	.....	.....	1	1
Other.....	105	60	44	12	12	9	3	5	3	1
Not reported.....	18	.....	2	.....	.....	1	.....	1	.....	16

¹ Includes miscarriages.

TABLE 195.—Occupation during pregnancy, by age of mother; illegitimate births¹ in 1915.

Occupation of mother during pregnancy.	Illegitimate births ¹ in 1915.				
	Total.	Age of mother.			
		Under 16.	16-20	20 and over.	Not reported.
All occupations.....	1,124	55	454	610	5
Domestic.....	331	13	152	165	1
Factory operative.....	142	1	65	76	.....
Textile and clothing.....	52	1	24	27	.....
Cannery and food.....	41	.....	17	24	.....
Other factory and factory n. s.....	49	.....	24	25	.....
Laundress.....	94	2	23	69	.....
Waitress, cook, or kitchen girl.....	66	1	22	43	.....
Charwoman.....	57	2	13	42	.....
Nursemaid.....	21	2	13	6	.....
Stenographer or clerk.....	13	.....	4	9	.....
Seamstress.....	11	.....	.....	7	.....
Chambermaid.....	10	2	5	3	.....
Saleswoman.....	6	.....	.....	6	.....
Nurse.....	4	.....	.....	4	.....
School teacher.....	3	.....	2	1	.....
Telephone operator.....	3	.....	.....	3	.....
All other ²	12	.....	4	7	1
Not employed.....	122	22	65	35	.....
Schoolgirl.....	17	6	9	2	.....
Other.....	105	16	56	33	.....
Not reported.....	220	10	82	134	3

¹ Includes miscarriages.

² Includes 1 of each of the following: chorus girl, companion, hair-dresser, demonstrator, peddler, florist's helper, proprietor of grocery store, farm worker, maid in hospital, maid in department store, lady's maid, and prostitute.

TABLE 196.—Age of mother, by color; illegitimate births ¹ in 1915.

Age of mother.	Illegitimate births ¹ in 1915.					
	Total.		White mothers.		Colored mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	1,124	100.0	420	100.0	704	100.0
Under 20.....	509	45.3	149	35.5	360	51.1
Under 16 ²	55	4.9	10	2.4	45	6.4
16-17.....	180	16.0	44	10.5	136	19.3
18-19.....	274	24.4	95	22.6	179	25.4
20-24.....	373	33.2	185	44.0	188	26.7
25-29.....	114	10.1	48	11.4	66	9.4
30-34.....	62	5.5	17	4.0	45	6.4
35-39.....	45	4.0	13	3.1	32	4.5
40 and over.....	16	1.4	6	1.4	10	1.4
Not reported.....	5	.4	2	.5	3	.4

¹ Includes miscarriages.² Sixteen years is the age of consent in Maryland.TABLE 197.—Marital condition at confinement and one year later, by color of mother; scheduled illegitimate births ¹ in 1915.

Marital condition at confinement and color of mother.	Scheduled illegitimate births ¹ in 1915.													
	Total.		Marital condition of mother at 1 year after confinement.											
	Number.	Per cent distribution.	Unchanged.	Married.						Mother died.	Not reported.			
				To father of child.		To another.		Not reported to whom married.						
Number.	Per ct. ²	Number.	Per ct. ²	Number.	Per ct. ²	Number.	Per ct. ²	Number.	Per ct. ²	Number.	Per ct. ²	Number.	Per ct. ²	
White mothers....	192	100.0	142	74.0	19	9.9	12	6.3	1	0.5	3	1.6	15	7.8
Single.....	149	77.6	117	78.5	16	10.7	9	6.0	.....	.....	1	.7	6	4.0
Widowed, divorced, or separated.....	29	15.1	20	.....	3	.....	3	.....	.....	.....	1	.....	2	.....
Married.....	7	3.6	5	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....
Not reported.....	7	3.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	.....
Colored mothers....	487	100.0	406	83.4	37	7.6	16	3.3	1	.2	11	2.3	16	3.3
Single.....	426	87.5	351	82.4	37	8.7	16	3.8	.....	.....	10	2.3	12	2.8
Widowed, divorced, or separated.....	52	10.7	50	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....
Married.....	5	1.0	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Not reported.....	4	.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4

¹ Includes miscarriages.² Not shown where base is less than 100.

TABLE 198.—*Order of birth,¹ by color of mother; total and scheduled illegitimate births¹ in 1915.*

Order of birth ¹ and color of mother.	Illegitimate births ¹ in 1915.			
	Total.		Scheduled.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
White mothers.....	420	100.0	192	100.0
First.....	345	82.1	140	72.9
Second.....	42	10.0	26	13.5
Third.....	13	3.1	11	5.7
Fourth to sixth.....	10	2.4	7	3.6
Seventh or later.....	9	2.1	8	4.2
Not reported.....	1	.2		
Colored mothers.....	704	100.0	487	100.0
First.....	407	57.8	268	55.0
Second.....	139	19.7	95	19.5
Third.....	50	7.1	41	8.4
Fourth to sixth.....	61	8.7	45	9.2
Seventh or later.....	43	6.1	38	7.8
Not reported.....	4	.6		

¹ Includes miscarriages.

TABLE 199.—Order of birth,¹ by color of mother and legitimacy; scheduled illegitimate births¹ in 1915, and previous births¹ to mothers of scheduled illegitimate births¹ in 1915.

Order of birth ¹ and color of mother.	Scheduled illegitimate births in 1915.	Previous births ¹ to mothers of scheduled illegitimate births ¹ in 1915.				
		Total.	All previous births ¹ illegitimate.	All previous births ¹ legitimate.	Previous births ¹ divided as to legitimacy.	Legitimacy not reported.
All mothers.....	679	792	399	131	189	73
First.....	406	.....	.....	.....	.....	.....
Second.....	121	121	108	11	.....	.....
Third.....	52	104	82	12	8	.....
Fourth.....	17	51	30	12	.....	.....
Fifth.....	20	80	36	16	24	.....
Sixth.....	15	75	45	15	15	.....
Seventh.....	14	54	54	12	18	.....
Eighth.....	11	77	14	28	28	.....
Ninth.....	9	72	.....	16	40	.....
Tenth.....	5	45	9	9	18	.....
Eleventh.....	2	20	.....	.....	20	.....
Twelfth.....	1	11	11	.....	.....	.....
Thirteenth.....	2	24	12	.....	12	.....
Fourteenth.....	1	13	.....	.....	.....	.....
Sixteenth.....	1	15	.....	.....	.....	.....
White mothers.....	192	142	33	33	51	25
First.....	140	.....	.....	.....	.....	.....
Second.....	26	26	16	9	.....	.....
Third.....	11	22	14	4	2	.....
Fourth.....	3	9	3	6	.....	.....
Fifth.....	3	12	.....	8	4	.....
Sixth.....	1	5	.....	.....	5	.....
Seventh.....	2	12	.....	6	6	.....
Eighth.....	2	14	.....	.....	14	.....
Ninth.....	1	8	.....	.....	8	.....
Tenth.....	1	9	.....	.....	.....	.....
Thirteenth.....	1	12	.....	.....	12	.....
Fourteenth.....	1	13	.....	.....	.....	.....
Colored mothers.....	487	650	366	98	138	48
First.....	268	.....	.....	.....	.....	.....
Second.....	95	95	90	2	.....	.....
Third.....	41	82	68	8	6	.....
Fourth.....	14	42	27	6	6	.....
Fifth.....	17	68	38	8	20	.....
Sixth.....	14	70	45	15	10	.....
Seventh.....	12	72	54	6	12	.....
Eighth.....	9	63	14	28	14	.....
Ninth.....	8	64	.....	16	32	.....
Tenth.....	4	36	9	9	18	.....
Eleventh.....	2	20	.....	.....	20	.....
Twelfth.....	1	11	11	.....	.....	.....
Thirteenth.....	1	12	12	.....	.....	.....
Sixteenth.....	1	15	.....	.....	.....	.....

¹ Includes miscarriages.

TABLE 200.—*Legitimacy of previous births,¹ by order of birth,² scheduled illegitimate births¹ in 1915.*

Legitimacy of previous births. ¹	Scheduled illegitimate issues in 1915.						
	Total.	Order of birth. ¹					
		First.	Second and later.				
			Total.	Second.	Third.	Fourth to sixth.	Seventh and later.
All mothers.....	679	408	271	121	52	52	46
All previous births ¹ illegitimate.....	189	.....	189	106	41	28	14
All previous births ¹ legitimate.....	37	.....	37	11	6	11	9
Previous births ¹ divided.....	32	.....	32	.....	4	11	17
Legitimacy not reported.....	18	.....	13	4	1	2	6
White mothers.....	192	140	52	26	11	7	8
All previous births ¹ illegitimate.....	24	.....	24	16	7	1	.....
All previous births ¹ legitimate.....	16	.....	16	9	2	4	1
Previous births ¹ divided.....	8	.....	8	.....	1	2	5
Legitimacy not reported.....	4	.....	4	1	1	.....	2
Colored mothers.....	487	268	219	95	41	45	38
All previous births ¹ illegitimate.....	165	.....	165	90	34	27	14
All previous births ¹ legitimate.....	21	.....	21	2	4	7	18
Previous births ¹ divided.....	24	.....	24	.....	3	9	12
Legitimacy not reported.....	9	.....	9	3	.....	2	4

¹ Includes miscarriages.

TABLE 201.—*Occupation of father, by color of mother; illegitimate births¹ in 1915.*

Occupation of father.	Illegitimate births ¹ in 1915.			Occupation of father.	Illegitimate births ¹ in 1915.		
	Total.	White mothers.	Colored mothers.		Total.	White mothers.	Colored mothers.
All occupations..	1,124	420	704	Professional pursuits ⁴ ..	20	13	7
Laborers.....	308	31	277	Sailors.....	19	3	16
Teamsters, chauffeurs, and deliverymen.....	110	22	88	Railway emp. yees.....	19	18	1
Factory operatives.....	63	34	29	Proprietors and dealers.....	12	9	3
Farmers.....	58	27	31	Barbers.....	11	5	6
Cooks and waiters.....	36	.....	36	Janitors and elevator men.....	10	.....	10
Servants.....	34	4	30	Public employes ⁴	9	7	2
Porters.....	30	.....	30	Other occupations ⁴	29	14	15
Clerks.....	26	20	6	No occupation.....	21	7	14
Salesmen.....	26	22	4	Students.....	6	1	5
Skilled mechanics, building trades.....	25	15	10	Others.....	3	2	1
Others in mechanical industries.....	26	20	6	Father dead.....	12	4	8
				Not reported.....	232	149	83

¹ Includes miscarriages.
² Includes 2 issues with colored fathers; 1 occupation not reported; 1 dead.
³ Includes 2 issues with white fathers—1 teamster, etc., and 1 clerk—and 15 issues with fathers' color and occupation not reported.
⁴ Includes 4 physicians, 4 musicians, 3 school-teachers, 2 photographers, 2 jockeys, 1 lawyer, 1 dentist, 1 artist, 1 draftsman, and 1 editor.
⁵ Includes 2 soldiers, 1 policeman, 1 postman, 1 detective, 1 officer in a reformatory, and 3 whose occupations are not specified.
⁶ Includes 7 sailors, 7 fishermen or oystermen, 6 hospital orderlies, 5 saloon keepers or bartenders, 2 telephone operators, 1 butcher, and 1 baker.

TABLE 202.—Age of mother, by age of father and color of mother; illegitimate births¹ in 1915.

Age of mother.	Illegitimate births ¹ in 1915.													Not-reported.
	Total.	Age of father.												
		Under 20.					20-24	25-29	30-34	35-39	40-44	45-49	50 and over.	
		Total.	16	17	18	19								
All mothers.....	1,124	110	3	17	43	47	408	195	83	76	29	20	12	191
Under 20.....	509	101	3	16	40	42	243	67	9	9	5	4	.....	66
12.....	2	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	1
13.....	4	3	.....	1	.....	2	.....	.....	.....	.....	.....	.....	.....	3
14.....	12	4	1	1	2	.....	3	1	.....	.....	.....	1	.....	7
15.....	37	13	2	3	4	4	14	2	1	.....	.....	.....	.....	13
16.....	66	23	.....	3	15	5	25	4	.....	1	.....	.....	.....	18
17.....	114	29	.....	6	9	14	54	10	1	1	.....	1	.....	11
18.....	144	22	.....	2	7	13	78	23	3	4	2	1	.....	13
19.....	130	7	.....	.....	3	4	72	27	4	3	3	1	.....	13
20-24.....	373	9	.....	1	3	5	139	72	38	22	3	2	2	86
25-29.....	114	.....	.....	.....	.....	.....	18	35	20	16	4	2	2	17
30-34.....	62	.....	.....	.....	.....	.....	.....	11	11	16	9	5	1	9
35-39.....	45	.....	.....	.....	.....	.....	1	8	4	12	7	5	3	5
40 and over.....	16	.....	.....	.....	.....	.....	1	2	1	1	1	2	4	4
Not reported.....	5	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	4
White mothers.....	420	19	1	3	4	11	133	84	29	18	7	4	2	124
Under 20.....	149	16	1	2	3	10	63	27	2	2	.....	.....	.....	39
12.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
14.....	3	2	1	1	.....	.....	3	.....	1	.....	.....	.....	.....	3
15.....	7	.....	.....	.....	.....	.....	6	1	.....	.....	.....	.....	.....	6
16.....	15	2	.....	1	1	1	13	3	.....	.....	.....	.....	.....	10
17.....	29	3	.....	1	.....	2	20	8	1	2	.....	.....	.....	10
18.....	46	5	.....	.....	1	4	21	15	.....	.....	.....	.....	.....	9
19.....	49	4	.....	.....	1	3	15	.....	.....	.....	.....	.....	.....	63
20-24.....	185	3	.....	1	1	1	63	34	12	7	2	1	.....	12
25-29.....	48	.....	.....	.....	.....	.....	6	13	9	4	2	2	.....	4
30-34.....	17	.....	.....	.....	.....	.....	.....	5	2	4	2	.....	.....	4
35-39.....	13	.....	.....	.....	.....	.....	.....	4	3	1	.....	1	.....	4
40 and over.....	6	.....	.....	.....	.....	.....	.....	1	1	.....	1	.....	2	1
Not reported.....	2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1
Colored mothers.....	704	91	2	14	39	36	275	111	54	58	22	16	10	67
Under 20.....	360	85	2	14	37	32	185	40	7	7	5	4	.....	27
12.....	2	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	1
13.....	4	3	.....	1	.....	2	.....	.....	.....	.....	.....	.....	.....	2
14.....	9	2	.....	2	.....	.....	3	1	.....	.....	.....	.....	.....	4
15.....	30	13	2	3	4	4	11	2	.....	.....	.....	1	.....	7
16.....	51	21	.....	3	14	4	19	3	.....	.....	.....	.....	.....	8
17.....	85	26	.....	5	9	12	41	7	.....	1	.....	1	.....	1
18.....	98	17	.....	2	6	9	58	15	2	2	2	1	.....	4
19.....	81	3	.....	.....	2	1	51	12	4	3	3	1	.....	1
20-24.....	188	6	.....	.....	2	4	76	38	26	15	1	1	2	23
25-29.....	66	.....	.....	.....	.....	.....	12	22	11	12	2	.....	2	5
30-34.....	45	.....	.....	.....	.....	.....	.....	6	9	12	7	5	1	5
35-39.....	32	.....	.....	.....	.....	.....	1	4	1	11	7	4	3	1
40 and over.....	10	.....	.....	.....	.....	.....	1	1	.....	1	.....	2	2	3
Not reported.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3

¹ Includes miscarriages.

TABLE 203.—Place of confinement, by legitimacy of birth;¹ total and scheduled births¹ in 1915.

Place of confinement and legitimacy of birth. ¹	Births ¹ in 1915.			
	Total.		Scheduled.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
Illegitimate ²	1,124	100.0	679	100.0
Hospital.....	517	46.0	245	36.1
Institution.....	56	5.0	10	1.5
Private house.....	551	49.0	424	62.4
Legitimate.....	13,484	100.0	11,613	100.0
Hospital.....	1,735	12.9	1,105	9.5
Other.....	11,749	87.1	10,508	90.5

¹ Includes miscarriages.² Includes 420 white and 704 colored issues; hospital, 218 white and 299 colored; institution, 54 white and 2 colored; private house, 148 white and 403 colored. The "private houses" include boarding and lodging houses, one house of prostitution, several homes of midwives, and the waitresses' home connected with a hospital. Maternity homes in Baltimore send all confinement cases to hospitals.TABLE 204.—Attendant at birth, by color of mother; scheduled legitimate and illegitimate births¹ in 1915.

Attendant at birth and color of mother.	Legitimate births. ¹		Illegitimate births. ¹	
	Number.	Per cent distribution.	Number.	Per cent distribution.
All mothers.....	11,463	100.0	679	100.0
Physician.....	7,721	67.4	571	84.1
In hospital.....	1,068	9.5	245	36.1
Outside hospital.....	6,653	57.9	326	48.0
Midwife.....	3,713	32.4	100	14.7
Other or none.....	20	.3	8	1.2
White mothers.....	9,974	100.0	192	100.0
Physician.....	6,620	66.4	151	78.6
In hospital.....	887	8.9	76	39.6
Outside hospital.....	5,733	57.5	75	39.1
Midwife.....	3,328	33.4	80	20.3
Other or none.....	26	.3	3	1.0
Colored mothers.....	1,489	100.0	487	100.0
Physician.....	1,101	73.9	420	86.2
In hospital.....	301	20.2	169	34.7
Outside hospital.....	800	53.7	251	51.5
Midwife.....	388	26.1	61	12.5
Other or none.....	3	.2	6	1.2

¹ Includes miscarriages.

TABLE 205.—*Prenatal care, by color of mother; mothers of scheduled legitimate and illegitimate births¹ in 1915.*

Legitimacy of birth ¹ and color of mother.	Total mothers.	Births ¹ in 1915 to mothers having specified prenatal care.			
		No care.		Care of grades A and B.	
		Number.	Per cent.	Number.	Per cent.
All mothers:					
Legitimate.....	11,463	5,443	47.5	2,551	23.3
Illegitimate.....	670	263	39.3	199	29.7
White mothers:					
Legitimate.....	9,974	4,806	48.2	2,095	21.0
Illegitimate.....	191	93	48.7	37	19.4
Colored mothers:					
Legitimate.....	1,489	637	42.8	456	30.6
Illegitimate.....	479	170	35.5	162	33.8

¹ Includes miscarriages.TABLE 206.—*Mother's mode of living during whole or greater part of year after confinement, by color of mother; scheduled illegitimate births¹ in 1915.*

Mother's mode of living during whole or greater part of year after confinement.	Scheduled illegitimate births ¹ in 1915.					
	Total.				White mothers.	
	Number.	Per cent distribution.	Still-births, miscarriages, and infant deaths under 2 weeks. ²	Infants surviving 2 weeks. ²	Number.	Per cent distribution.
Total.....	679	100.0	151	528	192	100.0
Parental home.....	275	40.5	57	218	79	41.1
With other relatives or friends.....	68	10.0	9	59	12	6.3
With father of child.....	111	16.3	30	81	25	13.0
Married.....	45	6.6	(³)	(³)	17	8.9
Unmarried.....	66	9.7	(³)	(³)	8	4.2
Own establishment or boarding.....	83	12.2	15	68	23	12.0
At service.....	21	3.1	3	18	6	3.1
In institution or hospital.....	19	2.8	2	17	19	9.9
With husband or other man (not father of child).....	16	2.4	8	8	5	2.6
Died.....	14	2.1	6	8	3	1.6
Not reported.....	72	10.6	21	51	20	10.4

¹ Includes miscarriages.² For per cent distribution, see text table, p. 161.³ Not tabulated.

TABLE 206.—*Mother's mode of living during whole or greater part of year after confinement, by color of mother; scheduled illegitimate births¹ in 1915—Continued.*

Mother's mode of living during whole or greater part of year after confinement.	Scheduled illegitimate births ¹ in 1915.					
	White mothers.		Colored mothers.			
	Still-births, miscarriages, and infant deaths under 2 weeks. ²	Infants surviving 2 weeks. ²	Number.	Per cent distribution.	Still-births, miscarriages, and infant deaths under 2 weeks. ²	Infants surviving 2 weeks. ²
Total.....	39	153	487	100.0	112	375
Parental home.....	17	62	196	40.2	40	156
With other relatives or friends.....	2	10	56	11.5	7	49
With father of child.....	6	19	86	17.7	24	62
Married.....	(³)	(³)	28	5.7	(³)	(³)
Unmarried.....	(²)	(²)	58	11.9	(²)	(²)
Own establishment or boarding.....	4	19	60	12.3	11	49
At service.....	2	6	15	3.1	3	12
In institution or hospital.....	2	17	.....	.....	.....	.....
With husband or other man (not father of child).....	3	2	11	2.3	5	6
Died.....	2	1	11	2.3	4	7
Not reported.....	3	17	52	10.7	18	34

¹ Includes miscarriages. ² For per cent distribution, see Text Table III, p. 162. ³ Not tabulated.

TABLE 207.—*Earnings of father or contributions to the support of mother or child during year following birth of infant, and mode of living, by color of mother; scheduled illegitimate births¹ in 1915.*

Earnings of father or contributions to the support of mother or child during year following birth of infant, and mode of living.	Scheduled illegitimate births ¹ in 1915.					
	Total.		White mothers.		Colored mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	679	100.0	192	100.0	487	100.0
Did not live with mother ²	526	77.5	144	75.0	382	78.4
Contributed:						
Nothing.....	305	44.9	94	49.0	211	43.3
Under \$5.....	18	2.7	1	.5	17	3.5
\$5-\$24.....	23	3.4	2	1.0	21	4.3
\$25-\$49.....	19	2.8	7	3.6	12	2.5
\$50-\$99.....	49	7.2	19	9.9	30	6.2
\$100 and over.....	58	8.5	13	6.8	45	9.2
Amount not reported.....	54	8.0	8	4.2	46	9.4
Lived with mother ²	111	16.3	26	13.0	86	17.7
Earned:						
Under \$450.....	51	7.5	4	2.1	47	9.7
\$450-\$649.....	25	3.7	8	4.2	27	5.5
\$650-\$849.....	8	1.2	4	2.1	4	.8
\$850-\$1,249.....	6	.9	5	2.6	1	.2
\$1,250 and over.....	1	.1	1	.5	.....	.....
Amount not reported.....	10	1.5	3	1.6	7	1.4
Mode of living not reported.....	42	6.2	23	12.0	19	3.9

¹ Includes miscarriages.

² During entire or greater part of year.

TABLE 208.—*Contribution of father to the support of mother or child during year following birth of infant, by mode of living, and by color of mother; scheduled illegitimate births in 1915.*

Contribution of father to the support of mother or child during year following birth of infant, mode of living, and color of mother.	Scheduled illegitimate births ¹ in 1915.					
	Total.		Live births.		Stillbirths and miscarriages.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution. ²
All mothers.....	679	100.0	572	100.0	107	100.0
Father's mode of living:						
Did not live with mother—						
Contributed nothing.....	305	44.9	242	42.3	63	58.9
Contributed.....	231	32.5	199	34.8	22	20.6
Lived with mother ³	111	16.3	92	16.1	19	17.8
Not reported.....	42	6.2	39	6.8	3	2.8
White mothers.....	192	100.0	163	100.0	29	100.0
Father's mode of living:						
Did not live with mother—						
Contributed nothing.....	94	49.0	72	44.2	22	.....
Contributed.....	50	26.0	48	29.4	2	.....
Lived with mother ³	25	13.0	22	13.5	3	.....
Not reported.....	23	12.0	21	12.9	2	.....
Colored mothers.....	487	100.0	409	100.0	78	100.0
Father's mode of living:						
Did not live with mother—						
Contributed nothing.....	211	43.3	170	41.6	41	52.6
Contributed.....	171	35.1	151	36.9	20	25.6
Lived with mother ³	86	17.7	70	17.1	16	20.5
Not reported.....	19	3.9	18	4.4	1	1.3

¹ Includes miscarriages.

² Not shown where base is less than 50.

³ During entire or greater part of year.

TABLE 209.—Mortality among mothers during year after confinement, by cause of death and color; mothers of scheduled legitimate and illegitimate births¹ in 1915.

Color of mother and legitimacy of birth. ¹	Mothers who died in year following confinement.						
	Total.	Causes due to pregnancy and confinement.					
		Total.			Puerperal septicemia.		
		Num-ber.	Per 1,000 live births.	Per 1,000 confinements.	Num-ber.	Per 1,000 live births.	Per 1,000 confinements.
Mothers of legitimate births ¹	* 105	50	4.6	4.4	18	1.7	1.6
White.....	90	45	4.7	4.5	13	1.4	1.3
Colored.....	15	5	3.8	3.4	5	3.8	3.4
Mothers of illegitimate births ¹	14	6	10.5	9.0	2	3.5	3.0
White.....	3	1	6.1	5.2	1	6.1	5.2
Colored.....	11	5	12.2	10.4	1	2.4	2.1

Color of mother and legitimacy of birth. ¹	Mothers who died in year following confinement.								
	Causes due to pregnancy and confinement.						All other causes.		
	Puerperal albumi-nuria and convul-sions.			Other causes due to confinement.					
	Num-ber.	Per 1,000 live births.	Per 1,000 confinements.	Num-ber.	Per 1,000 live births.	Per 1,000 confinements.	Num-ber.	Per 1,000 live births.	Per 1,000 confinements.
Mothers of legitimate births ¹	14	1.3	1.2	18	1.7	1.6	55	5.1	4.8
White.....	14	1.5	1.4	18	1.9	1.8	45	4.7	4.5
Colored.....							10	7.7	6.7
Mothers of illegitimate births ¹	1	1.7	1.5	3	5.2	4.5	8	14.0	11.9
White.....							2	12.3	10.5
Colored.....	1	2.4	2.1	3	7.3	6.3	6	14.7	12.5

¹ Includes miscarriages.

* The number of mothers was 1 less than the number of issues, since 1 birth resulted in plural issues.

TABLE 210.—*Earnings of mother, by period worked during year after confinement and type of remuneration; scheduled illegitimate births¹ in 1915.*

Earnings of mother and period worked during year after confinement.	Illegitimate births ¹ to working mothers receiving specified type of remuneration.					
	Cash alone.		Cash plus meals.		Room and board only. ²	Not reported.
	Number.	Per cent distribution. ³	Number.	Per cent distribution. ³		
9 months and over	102	100.0	183	100.0	2	19
Under \$50.....	3	2.9	4	2.2		
\$50-\$149.....	27	26.5	77	42.1		
\$150-\$249.....	39	38.2	86	47.0		
\$250-\$349.....	22	21.6	15	8.2		
\$350 and over.....	11	10.8	1	0.5		
Room and board only.....					2	
Not reported.....						19
6 months, under 9 months.....	48	100.0	47	100.0		3
Under \$50.....	2		2			
\$50-\$149.....	29		40			
\$150-\$249.....	11		5			
\$250-\$349.....	6					
\$350 and over.....						
Room and board only.....						
Not reported.....						3
Under 6 months.....	59	100.0	43	100.0	2	2
Under \$50.....	33	55.9	23			
\$50-\$149.....	24	40.7	20			
\$150-\$249.....	2	3.4				
Room and board only.....					2	
Not reported.....						2
Period not reported.....	3				1	17
Under \$50.....	2					
\$50-\$149.....	1					
Room and board only.....					1	
Not reported.....						17

¹ Includes miscarriages.² Rate not shown where base is less than 50.

TABLE 211.—*Mother's and infant's mode of living during year after birth, by color of mother; scheduled illegitimate infants born in 1915 and surviving at least two weeks.*

		Illegitimate infants born during 1915 and surviving at least 2 weeks.							
		Living during greater part of first year of life.							
Mother's mode of living during entire or greater part of year following confinement, and color.	Total.	Away from mother.						With others.	
		With mother.	Total.	With mother's relatives.	With foster parents.	In institution or hospital.	Boarding.		
							In boarding home.		In private home.
All mothers.....	528	429	99	13	10	17	39	18	2
In parental home.....	218	201	17	4	5	7	1		
With other relatives or friends.....	59	48	11	3	1	7			
With father of child.....	81	79	2	1		1			
With husband or man other than father.....	8	8							
In service.....	18	6	12	3	1	3	5		
In institution or hospital.....	17	16	1		1				
In orphan establishment or boarded.....	68	62	6			5	1		
Not reported.....	8	4	4	3	1				
Total reported.....	51	5	46	3	3	11	16	11	2
White mothers.....	153	120	33		6	16	8	3	
In parental home.....	62	52	10		3	5	2		
With other relatives or friends.....	10	9	1		1				
With father of child.....	19	19							
With husband or man other than father.....	2	2							
In service.....	6	3	3			2	1		
In institution or hospital.....	17	16	1			1			
In orphan establishment or boarded.....	19	17	2			1	1		
Not reported.....	1	1							
Total reported.....	17	1	16		2	10	3	1	
Colored mothers.....	375	309	66	13	4	1	31	15	2
In parental home.....	156	149	7		1		5	1	
With other relatives or friends.....	49	39	10	3			7		
With father of child.....	62	60	2	1			1		
With husband or man other than father.....	6	6							
In service.....	12	3	9	3	1		1	4	
In institution or hospital.....									
In orphan establishment or boarded.....	49	45	4				4		
Not reported.....	7	3	4	3	1				
Total reported.....	34	4	30	3	1	1	13	10	2

INFANT MORTALITY, BALTIMORE, MD.

TABLE 212.—*Infant mortality and stillbirth rates, by employment of mother away from home during pregnancy, and color of mother; scheduled legitimate and illegitimate births¹ and total illegitimate births¹ in 1915.*

Legitimacy of birth, ¹ employment away from home during pregnancy, and color of mother.	Miscarriages.		Births.	Stillbirths.		Live births.			Infant mortality rate.	
	Number.	Per cent.		Number.	Per cent.	Total.	Condition at 1 year.		Based on live births "condition known."	Based on total live births.
							Known.	Un-known.		
All mothers:										
Legitimate births ¹ (scheduled).....	418	3.6	11,196	398	3.6	10,797	10,797	103.5	108.5	
Illegitimate births ¹	61	5.4	1,083	108	10.2	955	699	402.0	294.2	
Total.....	46	6.8	653	61	9.0	572	572	300.7	300.7	
Employed away from home during pregnancy—										
Legitimate births ¹ (scheduled).....	83	5.9	1,317	88	6.7	1,229	1,229	179.8	179.8	
Illegitimate births ¹	45	6.3	671	77	11.5	594	458	371.2	290.2	
Total.....	57	7.4	462	52	11.3	410	410	314.6	314.6	
White mothers:										
Legitimate births ¹ (scheduled).....	280	3.3	9,774	282	2.9	9,492	9,492	95.9	95.9	
Illegitimate births ¹	94	5.7	396	22	5.6	374	241	496.6	315.5	
Total.....	16	8.3	176	13	7.4	163	163	319.0	319.0	
Employed away from home during pregnancy—										
Legitimate births ¹ (scheduled).....	35	4.8	688	29	4.2	659	659	160.8	160.8	
Illegitimate births ¹	19	8.1	205	14	6.8	191	126	436.0	298.0	
Total.....	14	11.1	113	10	8.9	102	102	352.9	352.9	
Colored mothers:										
Legitimate births ¹ (scheduled).....	88	5.8	1,421	116	8.2	1,305	1,305	166.6	166.6	
Illegitimate births ¹	37	5.3	667	86	12.9	581	458	355.9	291.6	
Total.....	30	6.2	457	43	10.5	409	409	263.4	263.4	
Employed away from home during pregnancy—										
Legitimate births ¹ (scheduled).....	46	7.1	639	59	9.4	570	570	201.8	201.8	
Illegitimate births ¹	27	5.5	466	63	13.5	408	332	346.4	265.4	
Total.....	23	6.2	350	42	12.0	308	308	301.9	301.9	

¹ Includes miscarriages.

TABLE 213.—Age at death, by color of mother; deaths among illegitimate live births in 1915.

Age at death.	Deaths of illegitimate infants.			Age at death.	Deaths of illegitimate infants.		
	All mothers.	White mothers.	Colored mothers.		All mothers.	White mothers.	Colored mothers.
Total.....	281	118	163	Under 1 month—Con- 2 weeks, under 1 month.....	24	9	15
Under 1 month.....	102	33	69	1 month, under 2.....	43	25	18
Under 1 day.....	34	10	24	2 months, under 3.....	29	13	16
1 day, under 2.....	14	4	10	3 months, under 6.....	48	23	25
2 days, under 3.....	5	1	4	6 months, under 9.....	33	14	19
3 days, under 7.....	10	2	8	9 months, under 12.....	26	10	16
1 week, under 2.....	15	7	8				

TABLE 214.—Deaths per 1,000 live births, by age at death and color of mother; total illegitimate and scheduled legitimate live births in 1915.

Age at death.	Deaths per 1,000 live births.					
	All mothers.		White mothers.		Colored mothers.	
	Legiti- mate.	Illegiti- mate. ¹	Legiti- mate.	Illegiti- mate. ¹	Legiti- mate.	Illegiti- mate. ¹
Total.....	103.5	294.2	95.9	315.5	158.6	280.5
Under 1 month.....	44.2	106.8	41.5	88.2	63.6	118.8
Under 2 weeks.....	37.1	81.7	35.2	64.1	50.6	92.9
2 weeks, under 1 month.....	7.1	25.1	6.3	24.1	13.0	25.8
1 month, under 2.....	6.0	45.0	5.4	66.8	10.7	31.0
2 months, under 3.....	5.8	30.4	5.5	34.8	8.4	27.5
3 months, under 6.....	19.4	50.3	16.8	61.5	38.3	43.0
6 months, under 9.....	15.1	34.6	14.5	37.4	19.2	32.7
9 months, under 12.....	13.0	27.2	12.2	26.7	18.4	27.5

¹ Based on total illegitimate live births (374 white, 581 colored) and probably an understatement of the true rate, since condition at 1 year was not known for 133 white and 123 colored illegitimate infants.

TABLE 215.—Cause of death, by color of mother; deaths among illegitimate live birth in 1915.

Cause of death.	Deaths of illegitimate infants.		
	All mothers.	White mothers.	Colored mothers.
All causes.....	281	118	163
Gastric and intestinal diseases.....	67	37	30
Malformations.....	10	1	9
Early infancy.....	104	50	54
Premature birth.....	39	14	25
Congenital debility.....	62	34	28
Injuries at birth.....	3	2	1
Respiratory and other communicable diseases.....	79	26	53
Respiratory.....	52	17	35
Syphilis.....	17	5	12
Other communicable.....	10	4	6
All other causes ¹	21	4	17

¹ Includes 5 deaths, "cause ill-defined or unknown."

TABLE 216.—*Infant mortality rates, by cause of death and color of mother; total illegitimate and scheduled legitimate live births in 1915.*

Cause of death.	Infant mortality rates.					
	All mothers.		White mothers.		Colored mothers.	
	Legitimate.	Illegitimate. ¹	Legitimate.	Illegitimate. ¹	Legitimate.	Illegitimate. ¹
All causes.....	103.5	294.2	95.9	315.5	158.6	299.5
Gastric and intestinal diseases.....	29.1	70.2	28.9	98.9	30.7	51.6
Malformations.....	3.6	10.5	3.8	2.7	2.3	15.5
Early infancy.....	37.7	108.9	36.0	133.7	49.8	92.9
Premature birth.....	20.8	40.8	19.3	37.4	22.2	63.6
Congenital debility.....	12.8	64.9	12.5	90.9	14.6	68.2
Injuries at birth.....	4.1	3.1	4.2	5.3	3.1	1.7
Respiratory and other communicable diseases.....	26.4	82.7	21.0	66.6	65.9	91.3
Respiratory.....	19.7	54.5	15.7	45.5	49.0	60.2
Syphilis.....	1.3	17.8	.4	13.4	7.7	20.7
Other communicable.....	5.4	10.5	4.9	10.7	9.2	10.3
All other causes.....	6.6	22.0	6.1	10.7	10.0	28.3

¹ Based on total illegitimate live births (374 white, 581 colored) and probably an understatement of the true rate, since condition at 1 year was not known for 133 white and 123 colored infants.

‡

TABLE 217.—*Cause of death, by age at death; infant deaths among illegitimate live births in 1915.*

Cause of death.	Deaths among illegitimate infants born in 1915.														
	Total.	Occurring in specified month of age.													
		Total.	First.												
			Under 2 weeks.	2 weeks, under 1 month.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.
All causes.....	281	102	78	24	43	29	17	12	19	6	16	11	11	9	6
Gastric and intestinal diseases.....	67	6	2	4	9	10	4	5	8	2	9	4	6	3	1
Malformations.....	10	6	6	...	1	2	2	...	...	...	...	...	...	...	...
Early infancy.....	104	70	57	13	16	4	7	2	6	...	1	2	...	...	...
Respiratory diseases.....	52	9	5	4	6	8	4	3	6	2	5	4	3	...	...
Other communicable diseases.....	27	6	4	2	4	3	...	1	2	1	...	1	2	4	...
External causes.....	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diseases ill-defined or unknown.....	5	1	1	...	2	2	1	1	1	1	1	...	...	1	...
All other causes.....	13	4	3	1	2	2	1	1	...	1	1	...	...	1	...

TABLE 218.—Age of infant when mother began work, by color of mother; scheduled legitimate and illegitimate infants born in 1915.

Age of infant when mother began work, and color of mother.	Legitimate infants.				Illegitimate infants of mothers employed.	
	Total mothers employed.		Mothers employed away from home.		Number.	Per cent distribution.
	Number.	Per cent distribution.	Number.	Per cent distribution.		
All mothers employed.....	2,784	100.0	855	100.0	371	100.0
Under 1 month.....	755	27.1	60	7.0	41	11.1
Month, under 2.....	537	19.3	132	15.4	95	25.6
Months, under 3.....	293	10.5	99	11.6	70	18.9
Months, under 6.....	552	19.8	255	29.8	78	21.0
Months and over.....	634	22.8	308	36.0	83	22.4
Not reported.....	13	.5	1	.1	4	1.1
White mothers employed.....	1,999	100.0	435	100.0	91	100.0
Under 1 month.....	686	34.3	34	7.8	18	19.8
Month, under 2.....	351	17.6	46	10.6	15	16.5
Months, under 3.....	171	8.6	30	6.9	15	16.5
Months, under 6.....	329	16.5	119	27.4	22	24.2
Months and over.....	449	22.5	205	47.1	19	20.9
Not reported.....	13	.7	1	.2	2	2.2
Colored mothers employed.....	785	100.0	420	100.0	280	100.0
Under 1 month.....	69	8.8	26	6.2	23	8.2
Month, under 2.....	186	23.7	86	20.5	80	28.6
Months, under 3.....	122	15.5	69	16.4	55	19.6
Months, under 6.....	223	28.4	136	32.4	56	20.0
Months and over.....	185	23.6	103	24.5	64	22.9
Not reported.....					2	.7

TABLE 219.—Per cent of premature births and stillbirths and infant mortality rates among full-term births, by employment of mother during pregnancy; scheduled legitimate and illegitimate births¹ in 1915.

Employment of mother during pregnancy and legitimacy of birth. ²	Births ³ in 1915.							
	Total. ³	Premature.		Full term.				
		Number.	Per cent of total issues. ⁴	Births.	Stillbirths.		Infant deaths.	
					Number.	Rate per 100 births. ⁵	Number.	Rate per 1,000 live births. ⁶
All illegitimate births ¹	679	138	20.3	517	26	5.0	119	242.4
Mother employed.....	542	115	21.2	417	24	5.8	97	248.8
Mother not employed.....	119	21	17.6	96	2	2.1	19	202.1
Employment not reported.....	18	2	.....	4	.....	.....	3	.....
All single legitimate births ¹	11,316	1,092	9.7	10,215	222	2.2	738	73.9
Mother employed away from home.....	1,375	188	13.7	1,184	43	3.6	162	142.0
Mother not employed away from home.....	9,933	903	9.1	9,028	179	2.0	575	65.0
Employment not reported.....	8	1	.....	5	.....	.....	1	.....

¹ Includes miscarriages.² For 24 illegitimate births and 9 legitimate births the period of gestation was not reported.³ Not shown where base is less than 50.

TABLE 220.—*Infant mortality and stillbirth rates, by literacy and color of mother; scheduled illegitimate births¹ in 1915.*

Literacy and color of mother.	Scheduled illegitimate births ¹ in 1915.								
	Total births. ¹	Miscarriages.		Births.	Stillbirths.		Live births.	Infant deaths.	
		Num-ber.	Per cent of total. ²		Num-ber.	Per cent of total. ²		Num-ber.	Infant mortality rate. ³
All mothers.....	679	46	6.8	633	61	9.6	572	172	300.7
Literate.....	553	29	5.2	524	52	9.9	472	128	271.2
Illiterate.....	100	17	17.0	83	9	.....	74	28	.....
Not reported.....	26	.....	.....	26	.....	.....	26	16	.....
White mothers.....	192	16	8.3	176	13	7.4	163	52	319.0
Literate.....	155	12	7.7	143	12	8.4	131	38	280.1
Illiterate.....	21	4	.....	17	1	.....	16	8	.....
Not reported.....	16	.....	.....	16	.....	.....	16	6	.....
Colored mothers.....	487	30	6.2	457	48	10.5	409	120	283.4
Literate.....	398	17	4.3	381	40	10.5	341	90	263.9
Illiterate.....	79	13	.....	66	8	.....	58	20	.....
Not reported.....	10	.....	.....	10	.....	.....	10	10	.....

¹ Includes miscarriages.² Not shown where base is less than 100.TABLE 221.—*Infant mortality rates, by mode of living and earnings of father or contributions to the support of mother or child during year following birth of infant; scheduled illegitimate live births in 1915.*

Earnings of father or contributions to the support of mother or child during year following birth of infant, and mode of living.	Scheduled illegitimate live births in 1915.		
	Total.	Infant deaths.	
		Number.	Infant mortality rate. ¹
Total.....	572	172	300.7
Father did not live with mother ¹	441	121	274.4
Contributed to her support.....	199	46	231.2
Under \$50.....	56	10	178.6
\$50-\$99.....	46	5	.....
\$100 and over.....	54	14	259.3
Amount not reported.....	43	17	.....
Did not contribute to her support.....	242	75	309.9
Father lived with mother ¹	92	32	347.8
Earned:			
Under \$650.....	60	26	376.8
\$650 and over.....	13	4	.....
Amount not reported.....	10	2	.....
No report on father's mode of living.....	39	19	.....

¹ During entire or greater part of year.² Not shown where base is less than 50.

cent of infant deaths, by separation of infant from mother, and color of illegitimate infants born in 1915 and surviving at 3 months and at 6 months

from mother and color of other.	Illegitimate infants born in 1915 and surviving at—					
	3 months of age.			6 months of age.		
	Infants.	Subsequent deaths.		Infants.	Subsequent deaths.	
		Number.	Per cent.		Number.	Per cent.
.....	475	75	15.8	448	48	10.7
.....	383	46	12.0	365	28	7.7
.....	92	29	31.5	83	20	24.1
.....	337	48	14.2	319	30	9.4
.....	273	28	10.3	262	17	6.5
.....	64	20	31.3	57	13	22.8

ant mortality rates, by place of confinement; total and scheduled illegitimate live births in 1915.

and nature of group.	Illegitimate live births in 1915.					
	Live births.			Infant deaths.		
	Total.	Condition at 1 year.		Number.	Infant mortality rate. ¹	Under 2 weeks of age.
		Known.	Un-known.			
i.....	955	699	256	281	294.3	78
.....	460	269	191	106	230.4	(²)
.....	56	47	9	35	625.0	(²)
.....	439	383	56	140	318.9	(²)
d.....	572	572	.....	172	300.7	44
.....	216	216	.....	64	296.3	11
.....	10	10	.....	2	200.0	2
.....	346	346	.....	106	306.4	31

1 is a minimum rate, based on known infant deaths and total live births.

TABLE 224.—*Infant mortality rates, by infant's place of residence and color of mother; scheduled illegitimate live births in 1915.*

Infant's place of residence.	Scheduled illegitimate live births in 1915.								
	Total.			White mothers.			Colored mothers.		
	Live births.	Infant deaths.		Live births.	Infant deaths.		Live births.	Infant deaths.	
		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹		Number.	Infant mortality rate. ¹
Total.....	572	172	300.7	163	52	319.0	409	120	28.4
Institution or boarded at sometime during first year of life.....	124	45	362.9	54	18	333.3	70	27	385.7
Institution only.....	33	15	.....	29	12	.....	4	3	.....
Institution and boarded.....	7	.....	.....	6	.....	.....	1	.....	.....
Boarding home.....	54	25	463.0	15	5	.....	39	20	.....
Boarded in private home.....	26	5	.....	3	1	.....	23	4	.....
Boarding home and private home.....	4	.....	.....	1	.....	.....	3	.....	.....
Never inmate of institution or boarded.....	447	127	284.1	108	34	314.8	339	93	274.3
Not reported.....	1	.....	.....	1	.....	.....	.....	.....	.....

¹ Not shown where base is less than 50.TABLE 225.—*Death rate per 1,000 infants, by removals of infant; scheduled illegitimate infants born in 1915 and surviving at 3 months and at 6 months of age.*

Removals of infant. ¹	Illegitimate infants born in 1915 and surviving at—					
	3 months of age.			6 months of age.		
	Total.	Subsequent deaths.		Total.	Subsequent deaths.	
		Number.	Per 1,000. ²		Number.	Per 1,000. ²
Total.....	475	75	157.9	448	48	107.1
No removals.....	201	28	139.3	186	13	68.9
One or more removals ³	253	42	166.0	241	30	124.5
Removals not reported.....	21	5	.....	21	5	.....

¹ Exclusive of removal from hospital after birth or visits to hospital of under 1 month's duration.² Not shown where base is less than 50.³ Includes in survivors at 6 months of age 139 infants who moved once, 65 infants who moved twice, 25 infants who moved 3 times, and 12 infants who moved 4 times or more during year.

TABLE 226.—Type of feeding, by month of life, and by color of mother; scheduled legitimate and illegitimate infants born in 1915.

Month of life and color of mother.	Infants born in 1915 and surviving at specified ages.					
	Breast fed.		Mixed fed.		Artificially fed.	
	Illegitimate.	Legitimate.	Illegitimate.	Legitimate.	Illegitimate.	Legitimate.
White mothers:						
First month.....	78.6	88.2	2.5	2.7	19.0	9.1
Second month.....	54.7	79.3	14.6	5.9	30.7	14.8
Third month.....	43.8	72.2	18.6	8.2	37.6	19.6
Sixth month.....	25.4	53.2	25.6	19.7	49.0	27.1
Ninth month.....	11.6	28.6	35.4	39.4	53.0	32.0
Colored mothers:						
First month.....	65.3	87.9	2.0	2.6	32.7	9.4
Second month.....	47.9	79.4	9.0	5.3	43.1	15.2
Third month.....	42.2	72.6	10.4	7.2	47.4	20.1
Sixth month.....	24.2	54.1	17.2	18.3	58.6	27.7
Ninth month.....	11.4	29.6	25.4	38.1	63.2	32.3
Mixed mothers:						
First month.....	83.8	90.2	2.7	2.8	13.5	6.9
Second month.....	57.5	78.0	16.9	10.1	25.6	11.9
Third month.....	44.4	68.9	21.9	15.7	35.7	15.4
Sixth month.....	25.9	46.8	29.0	30.4	45.2	22.8
Ninth month.....	11.7	21.1	39.1	49.8	49.2	29.1

TABLE 227.—Computed mortality rates for first 10 months of life, by type of feeding and color of mother; scheduled legitimate and illegitimate live births in 1915.

Type of infant feeding and color of mother.	Scheduled live births in 1915.							
	Legitimate.				Illegitimate.			
	Survivors at beginning of specified month.		Total months of feeding. ¹	Computed rate (for 10 months) per 1,000 fed. ²	Survivors at beginning of specified month.		Total months of feeding. ¹	Computed rate (for 10 months) per 1,000 fed. ²
	First.	Tenth.			First.	Tenth.		
White mothers:								
Infant feeding—								
Not fed, died at birth.....	234	(³)	(³)	24.7	6	(³)	(³)	36.8
Breast feeding.....	8,137	1,904	49,397	34.1	98	10	404	68.6
Mixed feeding.....	245	3,816	17,650	72.3	3	31	196	108.7
Artificial feeding.....	870	2,975	22,238	158.6	49	71	692	419.7
Not reported.....	6	3	47	(⁴)	7	5	54	(⁴)
Colored mothers:								
Infant feeding—								
Not fed, died at birth.....	35	(³)	(³)	26.8	22	(³)	(³)	53.8
Breast feeding.....	1,146	152	5,880	74.6	316	20	1,134	145.3
Mixed feeding.....	36	617	3,436	138.6	10	128	881	182.4
Artificial feeding.....	88	333	2,455	333.7	51	155	1,272	353.4
Not reported.....					10	2	50	(⁴)

¹ Number of infants fed in specified way times number of months so fed during first 10 months of life.² Rate is per 1,000 fed, except for "not fed, died at birth," which is based on total live births in group. or method of computation see Appendix V, p. 199.³ Inapplicable.⁴ Not shown where base is less than 100.

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